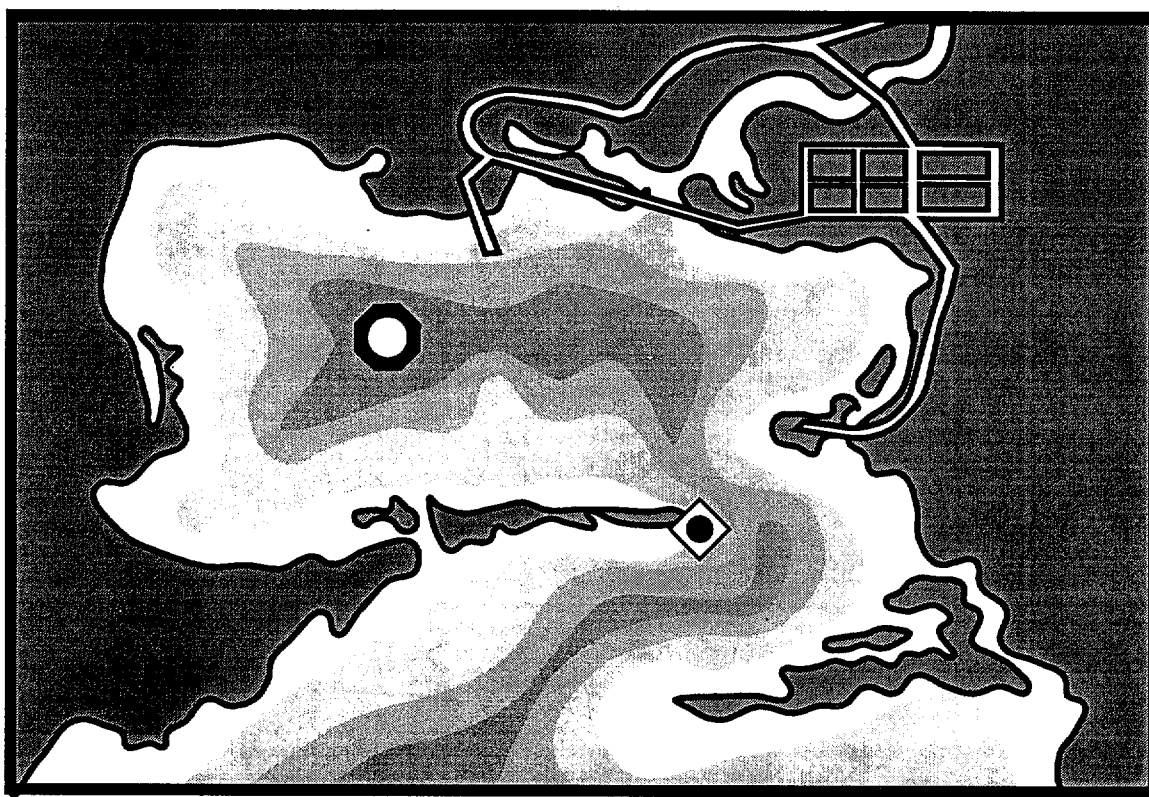


NOAA Technical Memorandum NOS ORCA 70

**NATIONAL STATUS AND TRENDS PROGRAM: MONITORING SITE
DESCRIPTIONS (1984-1990) FOR THE NATIONAL MUSSEL WATCH
AND BENTHIC SURVEILLANCE PROJECTS**



November 1993

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National Ocean Service
Office of Ocean Resources Conservation and Assessment

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**NATIONAL STATUS AND TRENDS PROGRAM: MONITORING SITE
DESCRIPTIONS (1984-1990) FOR THE NATIONAL MUSSEL WATCH
AND BENTHIC SURVEILLANCE PROJECTS**

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November 1993

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Office of Ocean Resources Conservation and Assessment
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NATIONAL STATUS AND TRENDS PROGRAM: MONITORING SITE DESCRIPTIONS (1984-1990) FOR THE NATIONAL MUSSEL WATCH AND BENTHIC SURVEILLANCE PROJECTS

Gunnar G. Lauenstein, Michelle R. Harmon, and Bernard W. Gottholm

Introduction

Concern about the condition of the environmental quality of the Nation's coastal and estuarine ecosystems resulted in the National Oceanic and Atmospheric Administration (NOAA) initiating the National Status and Trends (NS&T) Program in 1984. The goal of the NS&T Program is to determine the current status and temporal trends of the environmental quality of U.S. coastal and estuarine waters. A major part of this program involves monitoring the levels of trace and major elements and organic contaminants in benthic fish, bivalve mollusks, and sediments (NOAA, 1987; NOAA, 1989; NOAA, 1991). The National Benthic Surveillance Project and the Mussel Watch Project are the monitoring components within the NS&T Program. The purpose of this document is to provide detailed descriptions of the coastal and estuarine sites monitored by the NS&T Program.

National Benthic Surveillance Project

NOAA's National Benthic Surveillance Project (NBSP) has collected fish and associated sediment samples annually since 1984. Initially, samples were collected and analyzed from 50 sites around the United States, including Alaska. By 1990, 149 sites (Table 1) had been sampled. Field collections and laboratory analyses are performed by NOAA's National Marine Fisheries Service (NMFS). For the years 1984-1986 three laboratories were responsible for sample collection and analysis: the NMFS Northeast Fisheries Science Center collected samples from the Chesapeake Bay northward through Maine; the NMFS Southeast Fisheries Science Center collected samples from Pamlico Sound southward and along the Gulf of Mexico; the NMFS Northwest Fisheries Science Center was responsible for sample collection from West Coast states (California, Oregon, Washington, and Alaska). In 1987, the Northwest Fisheries Science Center also became responsible for collecting samples from the northeast Atlantic Coast.

A major objective of the NBSP is to document the occurrence of contaminant associated biological effects. As a result, NBSP sites are sometimes located in areas more contaminated than those sampled by the Mussel Watch Project.

Most of the site information in this document is derived from data supplied directly to NOAA's Coastal Monitoring and Bioeffects Assessment Division by NOAA's National Marine Fisheries Service, but three documents were also

useful: Varanasi, *et al.*, 1989, Hanson and Evans, 1990, and Zdanowicz and Gadbois, 1990.

In most cases, three stations comprise a site. This document provides specific stations where sediments were collected for the NBSP, but since fish are mobile, over the years fish trawls have been made along different tracks at each site. Not only are schools of fish found in different areas over time, but more than one trawl may be required to capture enough fish the right size range for monitoring purposes. Because of this, a nominal site center has been defined for all NBSP sites. Because sediment stations can be revisited year after year, it was from sediment station data that nominal site centers were derived. Fish trawl site information is also provided for sites where relatively large changes in trawling activities have occurred. Large changes in the location of trawling activities were, on occasion, necessitated by the fact that fish were not always found at the designated monitoring site.

The National Status and Trends Program attempts to limit the number of fish species that are collected so that chemical concentration data can be compared over the largest possible geographic area. The targeted species are not always caught and so, on occasion, a secondary species or even a tertiary species is collected. As a result, certain sites are associated with two or more species. The first species listed is the primary species. When a year date appears following a species name, that is the year in which that particular species was collected. Alaska samples have been taken from May to August. West Coast samples have been taken from May through July. Gulf Coast samples have been collected from July to November. Northeast samples (Chesapeake Bay through Maine) have been collected during March and April. Southeast samples have been collected from July through October.

Coordinates for the NBSP sites are listed in Table 1, while Table 2 and Table 3 list sites and years in which fish and sediments were collected, respectively. The regional sections provide detailed information on site locations.

More information about NOAA's National Benthic Surveillance Project can be found in several publications, including: Krahn, *et al.*, 1986; NOAA, 1987; Krahn, *et al.*, 1988; Varanasi, *et al.*, 1989; Zdanowicz and Gadbois, 1990; Hanson and Evans, 1991; and NOAA, 1991.

National Mussel Watch Project

In 1986, the National Mussel Watch Project was initiated and sampled 158 sites, 145 of which supplied mollusks (Tables 4, 5, 6). The Mussel Watch Project has now increased its monitoring effort to 245 sites.

On the Gulf Coast, Mussel Watch Project samples have been collected and analyzed by the Texas A&M University's Geochemical and Environmental Research Group, while Battelle is responsible for the U.S. East and West Coasts. Science Applications International Corporation was responsible for the first four years of the Californian and Hawaiian portions of the West Coast effort.

Criteria for the selection and sampling of National Status and Trends Mussel Watch sites are provided below:

- The NS&T Mussel Watch Project is not intended to quantify contaminants in "hot spots;" rather, mollusk collection sites were selected to be representative of their surroundings. Therefore, Mussel Watch sites were not located in areas such as New Bedford Harbor, where PCB concentrations are known to be uniquely high, or near waste discharge points or poorly flushed industrialized waterways.
- Sampling substrates, where possible, are limited to natural substrates or structures containing them, such as rock (including rip-rap and jetties), sand, or mud.
- Indigenous populations of mollusks must exist because caged mussels are not used in the regular monitoring effort. This criterion and constraint is one of the most important because mollusks are not uniformly distributed in the marine environment.
- The NS&T Mussel Watch Project selected sites that were sampled by the earlier Environmental Protection Agency Mussel Watch monitoring program (Palmieri *et al.*, 1984). Selecting sites that are coincident to the two monitoring efforts allows decadal comparisons between estuarine contaminants (Lauenstein *et al.*, 1990). Some locations that formerly supported bivalve mollusks and were sampled by the Environmental Protection Agency no longer support bivalve populations.
- Mussel Watch Project sites are collected in late fall and winter. Once a site and field sampling methods were established, repeat sampling was to occur within ± 3 weeks of that sampling date. The rationale for winter sampling was to avoid collecting spawning organisms. When mollusks are collected at the same time of year, their spawning status is more likely to be the same as that of the previous year, improving the chances of discovering temporal trends.

The number of species sampled is kept to a minimum in order to facilitate the greatest number of spatial data comparisons. The species collected include the blue mussel (*Mytilus edulis*) from Maine to Delaware Bay. *Mytilus edulis* alternates with the California mussel (*Mytilus californianus*) for West Coast collections. From Delaware Bay south and throughout the Gulf of Mexico, the American oyster (*Crassostrea virginica*) was sampled. Areas distant from the conterminous United States and those specimens collected in fresh water require the collection of alternate species. *Ostrea sandwicensis* is taken at Hawaiian Islands sites. The species collected from Puerto Rico is the Mangrove oyster (*Crassostrea rhizophorae*), at a site in southern Florida, the smooth edged jewel box (*Chama sinuosa*) is collected, and on the Great Lakes the introduced species, the zebra mussel (*Dreissena polymorpha*), is sampled.

Sites in Puerto Rico were added in 1992, and sites in the Great Lakes were added in 1992 and 1993. Three sites were established in Puerto Rico, and 13 sites were established in the Great Lakes region (Saginaw Bay, Lake Huron, Lake St. Clair, Lake Erie, and Lake Michigan).

Though the predominant mussel species collected for this project has been identified as *M. edulis*, there is some uncertainty whether mussels found on the U.S. West coast are the separate species *Mytilus trossulus* and *Mytilus galloprovincialis*, or whether all three taxonomic groups are simply hybrids of each other. The question of whether these groups are separate species or are a species complex is discussed in detail in Seed, 1992.

Analyses of co-occurring species have been performed by the National Status and Trends Program (NOAA, 1989). *M. edulis* and *C. virginica* on the East Coast, and *Mytilus edulis* and *Mytilus californianus* on the West Coast, were compared for trace element and organic contaminant concentrations. While differences were found between the abilities of *C. virginica* and *M. edulis* to concentrate certain trace elements, there was no clear difference between the bioaccumulation abilities of the two mussel species (NOAA, 1989).

Information detailing sampling and analytical methods for both projects can be found in Lauenstein and Cantillo (eds.), 1993.

Site Designations

A NBSP site is designated by a unique five-letter site code. The first three letters identify the general site location and the remaining two letters identify the specific location (e.g., Boston Harbor, Deer Island-BOSDI). In most cases, three stations comprise a site. Collection for bottom fish is conducted as close to the sediment stations as possible.

Mussel Watch Project sites are designated by a unique four-letter code. The first two letters identify the general site location and the remaining two letters identify the specific site location (e.g., Boston Harbor, Deer Island-BHDI). Each site is comprised of three bivalve mollusk and three sediment stations. Sediment collections are made as close to the bivalve collection site as possible.

Important Points

- This document informs those using NS&T Program data and aids those wishing to visit NS&T Program monitoring sites. Samples are collected on both private and public lands and permission to collect samples is frequently required. It is the responsibility of individuals wishing to visit these monitoring sites to comply with all laws and to observe the property rights of private land owners.
- Site coordinates and site descriptions have been confirmed by being plotted on NOAA charts. Until recently, all NOAA charts were based on the North American Datum (NAD) established in 1927. In 1983 a new NAD was established. The two datums display small differences in the locations of specific latitudes and longitudes. At this time, NOAA charts are all being converted to the 1983 NAD. Since all NOAA charts cited in the site descriptions are not all from the same datum, the reference datum is provided with each National Ocean Service (NOS) chart number. Information provided in this document should still be of use when all NOAA charts have been converted to the new datum because NOAA provides a conversion factor on each new chart. Chart dates are also provided for those sites that utilize navigational aids in their descriptions.
- Maps have been included to assist with locating sites. Some sites are relatively close together and are not separated at the resolution of the map used. In those cases the location was plotted with a number indicating the total number of sites found there.
- Nominal site centers for the northeast National Benthic Surveillance Project sample collections (Chesapeake northward to and including Maine) were provided by the Northeast National Marine Fisheries Laboratory for the years 1984-1986. The nominal site centers for the United States' Southeast (Pamlico Sound through the Gulf of Mexico), the U.S. West Coast (California northward

to Washington and Alaska), as well as the U.S. Northeast for 1987-1990 were based on the coordinates of sediment stations.

- Compass directions given in the National Benthic Surveillance Project and Mussel Watch Project site descriptions are based on magnetic compass directions. Site descriptions for these sites are based on NOAA charts.
- Water depths for the Mussel Watch Project sites are the depths of the bivalve collections. For National Benthic Surveillance Project sites, water depths are for the nominal site centers. Mussel Watch water depths are based on actual measurements at the time of 1989 field collections. The 1989 information was selected because it was the most complete. For sites not collected in 1989, water depths were derived from 1990 data. In rare cases where water depth was not measured it was taken from NOAA charts. For intertidal Mussel Watch sites, depths are given as meters above (+) or below (-) mean low water. For subtidal Mussel Watch sites, depths (+) are given as the actual water depth at the time of collection.
- Bivalve and sediment sites are generally co-located. The specific criterion was that bivalve and sediment sites were not to be separated by more than 2 kilometers. In certain instances it was not possible to stay within that requirement because bivalves, on occasion, were collected in high-energy environments where fine grained sediments (which are required by the NS&T Program) could not be found. When sediment sites were not closely associated with the bivalve site, the sediment location coordinates were also noted. Generally, when sediment and bivalve collections were separated by more than 4 nautical miles, the sediment site received its own site acronym.

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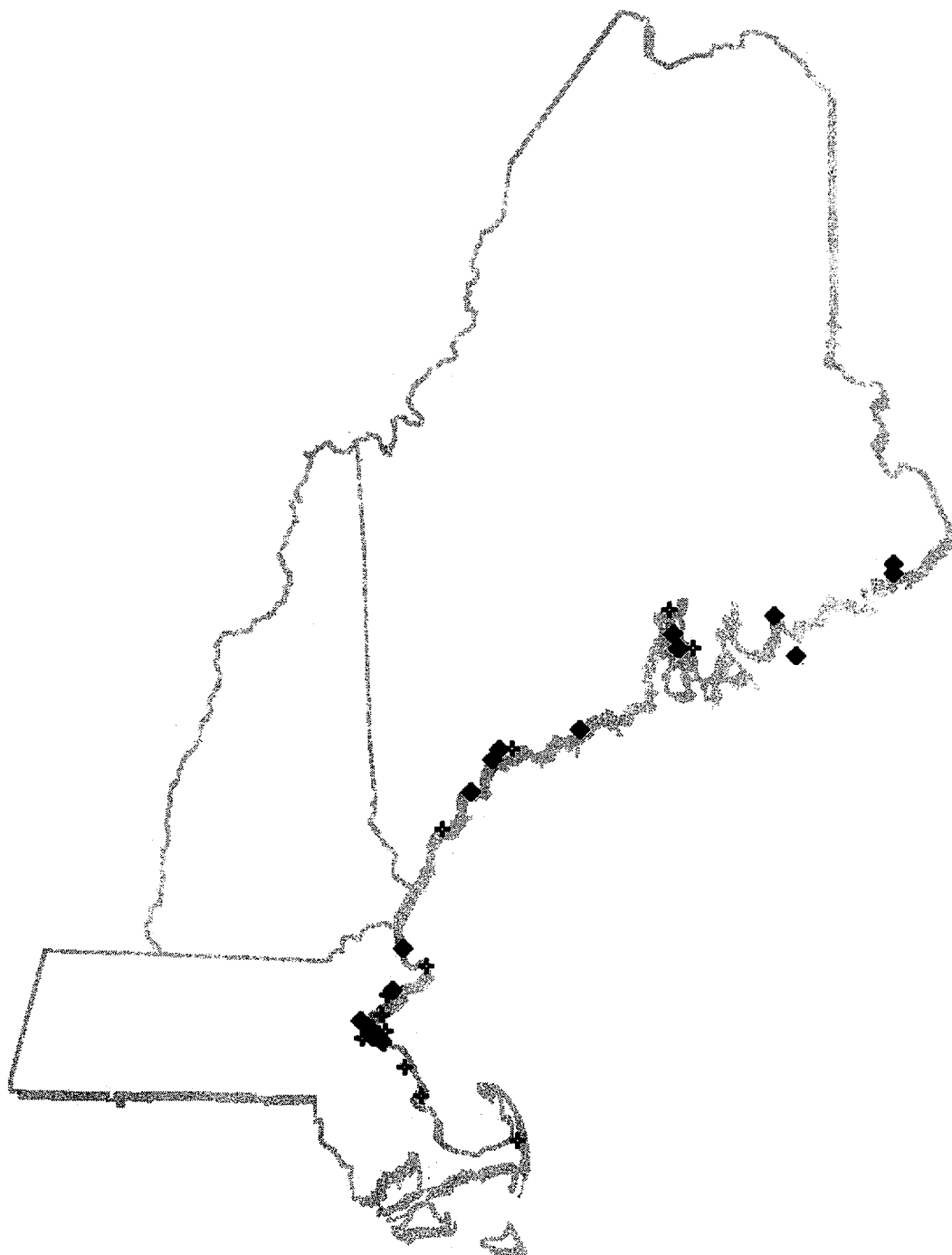
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NATIONAL STATUS & TRENDS PROGRAM

North Atlantic Region



+ Mussel Watch Project
◆ Benthic Surveillance Project

MAINE SITES

Mussel Watch

SITE - Penobscot Bay, Pickering Island, ME

SITE CODE - PBPI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 44° 15.88'N
68° 44.05'W

WATER DEPTH - 1.6 meters

LOCATED ON NOS CHART - 13309 (NAD 1927)

SITE DESCRIPTION - This site is located in a small cove on the northeast side of Pickering Island, in a subtidal area between Pickering and Eaton Island.

SAMPLING METHOD - Dredge collection.

SITE - Penobscot Bay, Sears Island, ME

SITE CODE - PBSI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 44° 27.13'N
68° 53.38'W

WATER DEPTH - 1.6 meter

LOCATED ON NOS CHART - 13309 (NAD 1927)

SITE DESCRIPTION - Mussels are collected from intertidal beds on the northwest shore of Sears Island, in Long Cove. Access is by foot from the road leading to Sears Island.

Take coastal Route 1 north to Belfast, and on through Searspond, continue past the Belfast Motor Inn (on the right) and travel for two miles along Long Cove. Make a right turn, leading over railroad tracks, towards Kidder Point. This road leads to a bridge that connects Kidder Point to Sears Island; cross the bridge and park along the end of the bridge on the right-hand side of the gravel road.

SAMPLING METHOD - Bivalves and sediments taken by hand from shore.

MAINE SITES

SITE - Merriconeag Sound, Stover Point, ME

SITE CODE - MSSP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 43° 45.48'N
69° 59.72'W

WATER DEPTH - 1.4 meters

LOCATED ON NOS CHART - 13290 (NAD 1927)

SITE DESCRIPTION - From Brunswick, pick up Route 123 adjacent to Bowdoin College (Harpwell Road) and continue for about 14 miles. There is an intersection with a post office and West Harpswell School on the right as you approach a hill. Bear left at this intersection onto Stovers Cove Road; follow it along the coast until reaching Stovers Point at the end. This site is located approximately 0.5 nautical miles across Merriconeag Sound from the established Environmental Protection Agency Mussel Watch site on Bailey's Island off of Stover Point on Harpswell Neck. This site is intertidal.

SAMPLING METHOD - Hand collection.

SITE - Cape Arundel, Kennebunkport, ME

SITE CODE - CAKP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 43° 20.87'N
70° 28.48'W

WATER DEPTH - 1.3 meters

LOCATED ON NOS CHART - 13286 (NAD 1927)

SITE DESCRIPTION - This site is north of Old Fort Point. Intertidal mussels are collected on the east bank of the Kennebunk River, north of the breakwater and near a parking lot at the mouth of river.

SAMPLING METHOD - Hand collection.

MAINE SITES

Benthic Surveillance

SITE - Machias Bay, Chance Island, ME

SITE CODE - MACCI

TARGET SPECIES - *Myoxocephalus octodecemspinosus* (longhorn sculpin) (1985-1986)

NOMINAL SITE CENTER - 44° 38.0'N
67° 20.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 16 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	MB1	44° 38.0'	67° 20.1'
1985	MB1	44° 38.0'	67° 20.1'
1985	MB2	44° 38.2'	67° 19.1'
1985	MB3	44° 40.7'	67° 20.8'
1985	MB4	44° 38.8'	67° 20.7'
1986	MB1	44° 38.0'	67° 20.1'
1986	MB3	44° 40.7'	67° 20.8'
1986	MB4	44° 38.8'	67° 20.7'
1989	A	44° 38.0'	67° 19.1'
1989	B	44° 38.3'	67° 19.2'
1989	C	44° 38.6'	67° 19.5'

LOCATED ON NOS CHART - 13326 (NAD 1927; November 17, 1984)

SITE DESCRIPTION - The site center can be located 0.8 nautical miles southwest of Chance Island, 1.4 nautical miles north of Northwest Head on Cross Island, and 1.3 nautical miles south of Avery Rock near the geographic center of Machias Bay.

SITE - Machias Bay, Hog Island, ME

SITE CODE - MACHI

TARGET SPECIES - *Myoxocephalus octodecemspinosus* (longhorn sculpin) (1987)

NOMINAL SITE CENTER - 44° 40.6'N
67° 20.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 11 meters

MAINE SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	44° 38.0'	67° 20.1'
1987	B	44° 40.6'	67° 20.7'
1987	C	44° 38.9'	67° 20.6'

LOCATED ON NOS CHART - 13326 (NAD 1927, November 17, 1984)

SITE DESCRIPTION - The site is located west of Hog Island by 0.3 nautical miles, northeast of Round Island by 0.6 nautical miles, and southeast of Holmes Point on the mainland by 0.8 nautical miles.

LOCATION - Frenchmans Bay, Long Porcupine Island, ME **SITE CODE** - FRNLP

TARGET SPECIES - *Myoxocephalus octodecemspinosus* (longhorn sculpin) (1985)

NOMINAL SITE CENTER - 44° 25.0'N
68° 10.0'W **WATER DEPTH AT
NOMINAL CENTER** - 30 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	FB1	44° 26.8'	68° 13.3'
1985	FB2	44° 26.5'	68° 10.4'
1985	FB3	44° 23.0'	68° 09.9'
1985	FB4	44° 19.0'	68° 08.1'
1986	FB1	44° 26.8'	68° 13.3'
1986	FB2	44° 26.5'	68° 10.4'
1986	FB3	44° 23.0'	68° 09.9'

LOCATED ON NOS CHART - 13312 (NAD 1927, October 27, 1984)

SITE DESCRIPTION - This site center is located 0.2 nautical miles north of Long Porcupine Island, 2.0 nautical miles southeast of the C "9" channel marker near Bald Rock, and 1.3 nautical miles southwest of Stave Island.

MAINE SITES

LOCATION - Penobscot Bay, Colt Head Island, ME

SITE CODE - PNBCH

TARGET SPECIES - *Myoxocephalus octodecemspinosus* (longhorn sculpin) (1985-1986)

NOMINAL SITE CENTER - 44° 15.0'N
68° 50.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 22 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	PB1	44° 24.4'	68° 53.3'
1985	PB2	44° 19.2'	68° 52.0'
1985	PB3	44° 12.7'	69° 00.7'
1985	PB4	44° 10.0'	68° 46.6'
1985	PB5	44° 07.7'	68° 58.4'
1986	PB1	44° 24.4'	68° 53.3'
1986	PB3	44° 12.7'	69° 00.7'
1986	PB4	44° 10.0'	68° 46.6'

LOCATED ON NOS CHARTS - 13302 (August 24, 1985), 13305 (November 24, 1984), 13309 (March 24, 1984), and 13307 (June 11, 1983) [All NAD 1927]

SITE DESCRIPTION - The site center for Colt Head Island is in the middle of a group of islands in East Penobscot Bay, 0.5 nautical miles to the north of Colt Head Island, 2.2 nautical miles south-southwest of the R "2" BELL buoy near Western Island, and 0.6 nautical miles southwest of Beach Island.

LOCATION- Penobscot Bay, Job Island, ME

SITE CODE - PNBJI

TARGET SPECIES - *Myoxocephalus octodecemspinosus* (longhorn sculpin) (1987)

NOMINAL SITE CENTER - 44° 12.8'N
69° 00.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 61 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	44° 24.4'	69° 53.2'
1987	B	44° 12.8'	69° 00.7'
1987	C	44° 10.1'	68° 46.5'

MAINE SITES

LOCATED ON NOS CHARTS - 13302 (August 24, 1985), 13305 (November 24, 1984), 13309 (March 24, 1984), and 13307 (June 11, 1983) [All NAD 1927]

SITE DESCRIPTION - The site center is located west of Job Island by 2.2 nautical miles, 1.1 nautical miles south of the Dillingham Ledge buoy, and 2.2 nautical miles east of the Curtis Island marker.

LOCATION - Penobscot Bay, Islesboro Island, ME

SITE CODE - PNBII

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1990)

NOMINAL SITE CENTER - 44° 19.6'N
68° 51.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 33 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	A	44° 20.0'	68° 51.7'
1990	B	44° 19.6'	68° 51.7'
1990	C	44° 19.2'	68° 51.7'

LOCATED ON NOS CHARTS - 13302 (August 24, 1985), 13305 (November 24, 1984), 13309 (March 24, 1984), and 13307 (June 11, 1983) [All NAD 1927]

SITE DESCRIPTION - This site is centered 1.3 nautical miles southeast of the mouth of Sabbath Day Harbor, 1.4 nautical miles southwest of the Islesboro Ledge C "9" marker, and 1.5 nautical miles northeast of Hewes Ledge C "1" marker.

MAINE SITES

LOCATED ON NOS CHARTS - 13302 (August 24, 1985), 13305 (November 24, 1984), 13309 (March 24, 1984), and 13307 (June 11, 1983) [All NAD 1927]

SITE DESCRIPTION - The site center is located west of Job Island by 2.2 nautical miles, 1.1 nautical miles south of the Dillingham Ledge buoy, and 2.2 nautical miles east of the Curtis Island marker.

LOCATION - Penobscot Bay, Islesboro Island, ME

SITE CODE - PNBII

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1990)

NOMINAL SITE CENTER - 44° 19.6'N
68° 51.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 33 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	A	44° 20.0'	68° 51.7'
1990	B	44° 19.6'	68° 51.7'
1990	C	44° 19.2'	68° 51.7'

LOCATED ON NOS CHARTS - 13302 (August 24, 1985), 13305 (November 24, 1984), 13309 (March 24, 1984), and 13307 (June 11, 1983) [All NAD 1927]

SITE DESCRIPTION - This site is centered 1.3 nautical miles southeast of the mouth of Sabbath Day Harbor, 1.4 nautical miles southwest of the Islesboro Ledge C "9" marker, and 1.5 nautical miles northeast of Hewes Ledge C "1" marker.

MAINE SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	CB14	43° 38.0'	69° 49.3'
1984	CB15	43° 41.0'	69° 56.7'
1984	CB5	43° 39.6'	70° 09.1'
1985	CB1	43° 47.1'	70° 03.4'
1985	CB2	43° 43.9'	70° 09.0'
1985	CB3	43° 42.8'	70° 05.9'
1985	CB4	43° 40.6'	70° 12.8'
1985	CB5	43° 39.6'	70° 09.1'
1986	CB1	43° 47.1'	70° 03.4'
1986	CB2	43° 43.9'	70° 09.0'
1986	CB4	43° 40.6'	70° 12.8'

LOCATED ON NOS CHART - 13288 (NAD 1927, April 20, 1985)

SITE DESCRIPTION - The site center is located 0.4 nautical miles west of Whaleboat Ledge and 0.8 nautical miles east of Great Chebeague Island. Station CB14 and CB15 were sampled in 1984 and are to the east of the other sites. Station CB14, located farther away from land than the remaining sites, is 3.8 nautical miles south of Fl 4 sec 25 ft 6 m buoy and 3.2 southwest of F 180 ft 18 m HORN on Seguin Island. Station CB15 was located 0.6 nautical miles northwest of the RB N buoy and 3.5 nautical miles southwest of Ragged Island.

LOCATION - Casco Bay, Cousins Island, ME

SITE CODE - CASCI

TARGET SPECIES - *Myoxocephalus octodecemspinosus* (longhorn sculpin) (1987)
Pleuronectes americanus (winter flounder) (1989)

NOMINAL SITE CENTER - 43° 41.4'N
 70° 08.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 18 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	43° 47.1'	70° 03.3'
1987	B	43° 43.9'	70° 09.1'
1987	C	43° 40.7'	70° 12.8'
1989	A	43° 41.9'	70° 07.6'
1989	B	43° 41.4'	70° 08.0'
1989	C	43° 41.2'	70° 08.4'

MAINE SITES

LOCATED ON NOS CHART - 13288 (NAD 1927, April 20, 1985)

SITE DESCRIPTION - The site center is located in Luckse Sound, east of Long Island, west of Cliff Island, and south of Hope Island; 0.9 nautical miles south southwest of the Fl G 6 sec 24 ft "5" marker at Spruce Point on Cousins Island. The site center is also 0.7 nautical miles east southeast of Basket Island and 0.3 nautical miles east of the "Bn Ra Ref" marker at the Lower Basket Ledge.

LOCATION - Cape Elizabeth, Richmond Island, ME

SITE CODE - CAPRI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1990)

NOMINAL SITE CENTER - 43° 31.9'N
70° 16.6'W

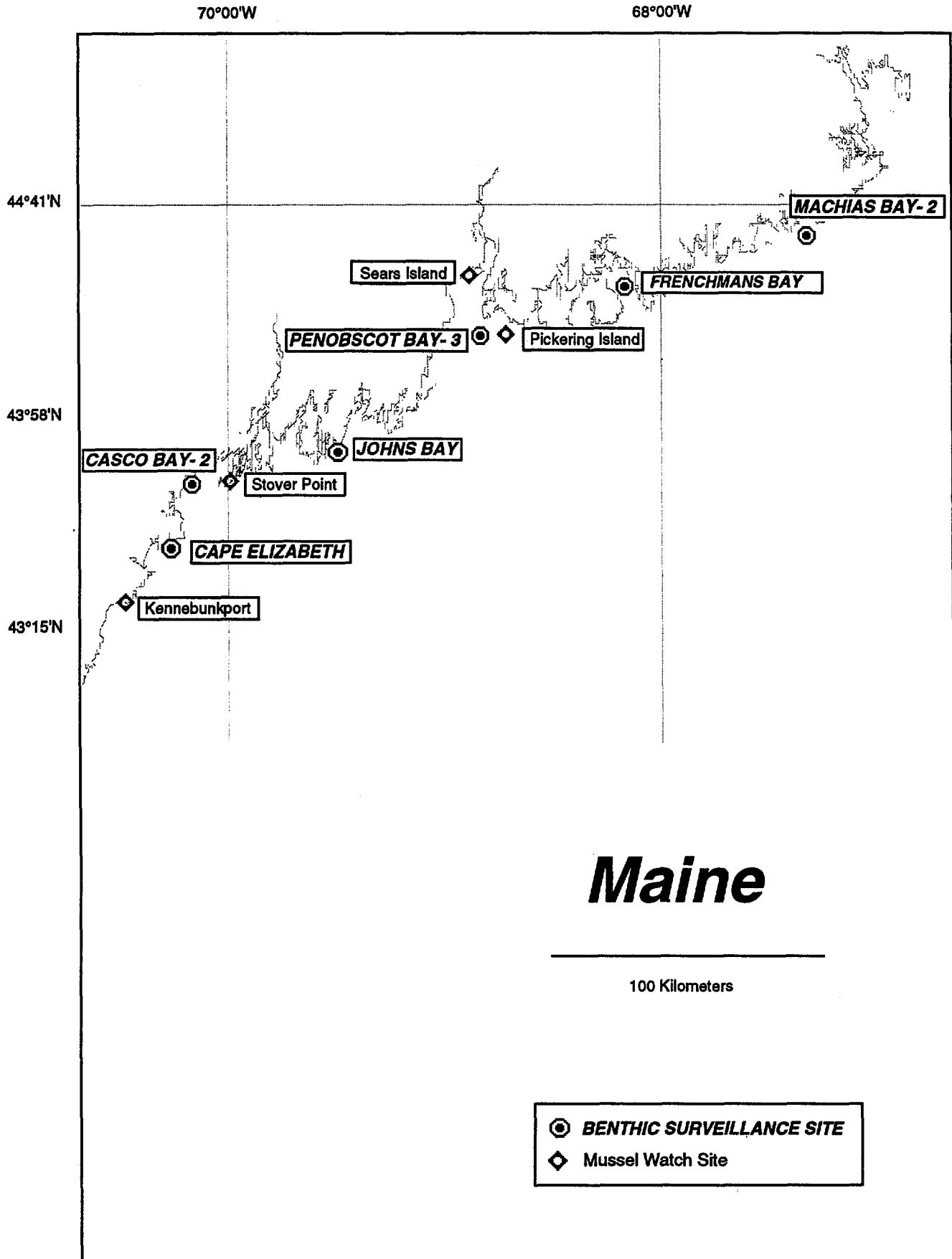
**WATER DEPTH AT
NOMINAL CENTER** - 26 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	A	43° 32.3'	70° 15.9'
1990	B	43° 31.9'	70° 16.6'
1990	C	43° 31.6'	70° 17.3'

LOCATED ON NOS CHART - 13287 (NAD 1927; January 4, 1986)

SITE DESCRIPTION - This site center is located southeast of Old Proprietor Ledge. It is 0.5 nautical miles southeast of buoy G C"1", 1.5 nautical miles west-southwest of Richmond Island, and 1.3 nautical miles southwest of C"3"G in Richmond Island Harbor.



MASSACHUSETTS SITES

Mussel Watch

SITE - Cape Ann, Gap Head, MA

SITE CODE - CAGH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 39.65'N (Bivalve) **WATER DEPTH** - 0.3 meter
70° 35.71'W

42° 40.04'N (Sediment)
70° 36.30'W

LOCATED ON NOS CHART - 13279 (NAD 1927)

SITE DESCRIPTION - Intertidal mussels are located on the mainland, in a small cove west of Straitsmouth Island. Access is by foot from the road which passes close to the cove. In 1986 and 1987 this site was designated as CASI.

SAMPLING METHOD - Hand and rake collection.

SITE - Salem Harbor, Folger Point, MA

SITE CODE - SHFP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 31.13'N **WATER DEPTH** - 0.1 meter
70° 52.02'W

LOCATED ON NOS CHART - 13274 (NAD 1927)

SITE DESCRIPTION - Bivalves are located between the West Town Landing and Folger Point. Access is via a stairway at the end of Beacon Street in Marblehead. This site is intertidal.

SAMPLING METHOD - Fork collection.

MASSACHUSETTS SITES

SITE - Massachusetts Bay, Nahant Bay

SITE CODE - MBNB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 25.23'N (Bivalve) **WATER DEPTH** - 1.2 meters
70° 54.41'W

42° 25.58'N (Sediment)
70° 54.10'W

LOCATED ON NOS CHART - 13275 (NAD 1927)

SITE DESCRIPTION - The site is located on the eastern coast of Nahant, south of Castle Rock. Mussels are collected intertidally.

SAMPLING METHOD - Hand collection.

SITE - Boston Harbor, Deer Island, MA

SITE CODE - BHDI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 21.50'N
70° 58.40'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 13270 (NAD 1927)

SITE DESCRIPTION - Intertidal and subtidal beds are collected at Point Shirley on the beach in front of the intersection of Billows and Grandview Streets, near a section of dilapidated piers.

Follow Route 1 to Winthrop. Follow Route 145 (Winthrop Avenue) to Winthrop Shore Drive and continue along the shoreline to Deer Island.

Fine-grained sediments are readily obtainable near the mussels.

SAMPLING METHOD - Rake collection.

MASSACHUSETTS SITES

SITE - Boston Harbor, Dorchester Bay, MA

SITE CODE - BHDB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 18.25'N
71° 02.30'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 13270 (NAD 1927)

SITE DESCRIPTION - Extensive intertidal beds exist in Dorchester Bay off the northern shore of Squantum Point. Subtidal extensions of these intertidal beds were sampled with a dredge or by rake in 1985 and 1986, but were collected at the intertidal beds at Squantum Point in 1986 through 1990. The site exists on the northern side of the point on the exposed tidal flats near C "7" and C "5A" navigation aids.

Take Route 3A north to Marina Bay in the Squantum section of Quincy. Squantum Point is located adjacent to the Marina Bay boardwalk and condominiums. Follow Route 3A to Shore Drive. Take Shore Drive to the Rotary and exit at the Corporate Park/Boardwalk/Marina exit to Haul Road. Haul Road leads to the Metro Parks/State Police parking lot. Park there and follow the shoreline/seawall towards the Boston Gas tanks.

The majority of the fine grained sediments is located on the northwest side of the channel. This site is under study by the University of Massachusetts, Boston Environmental Studies Division; moreover, it is in the vicinity of DEQE Boston Harbor coliform sampling Station 10.

SAMPLING METHOD - Dredge or hand collection.

SITE - Boston Harbor, Hingham Bay, MA

SITE CODE - BHHB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 16.45'N
70° 53.26'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 13270 (NAD 1927)

SITE DESCRIPTION - Subtidal extensions of intertidal beds were sampled. In 1986 samples were taken along the northwest corner and the north shore of Worlds End, as well as along the south shore of Sunset Point (Hull). In 1987 and 1988, the samples were collected on the south shore of Sunset Point opposite of World's End, in front of a green one-story house on Water Edge Road.

SAMPLING METHOD - Rake collection.

MASSACHUSETTS SITES

SITE - Boston Harbor, Brewster Island, MA

SITE CODE - BHBI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 20.55'N
70° 52.68'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 13270 (NAD 1927)

SITE DESCRIPTION - Subtidal mussel beds are found to exist within a cove on the north side of Outer Brewster Island. Mussels are sampled from rocks and sand substrate at the subtidal extension of intertidal beds, and from tidal pools. Access to the island is via a small boat. A dredge collection is not advised due to a gravel and rock bottom.

SAMPLING METHOD - Hand or rake collection.

SITE - Massachusetts Bay, North River, MA

SITE CODE - MBNR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 09.65'N
70° 44.41'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHARTS - 13269 and 13267 (NAD 1927)

SITE DESCRIPTION - Bivalves are collected from the first pile of rocks 50 meters east of Highway 3A. The bed is intertidal and is located on the south bank of the North River, on the south side of North River Bridge.

SAMPLING METHOD - Hand collection.

MASSACHUSETTS SITES

SITE - Duxbury Bay, Clarks Island, MA

SITE CODE - DBCI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 42° 00.88'N
70° 38.17'W

WATER DEPTH - 2.7 meters

LOCATED ON NOS CHART - 13253 (NAD 1927)

SITE DESCRIPTION - Subtidal mussels are located on the northeast side of Clarks Island.

SAMPLING METHOD - Mussels were collected using a dredge.

SITE - Cape Cod, Nauset Harbor, MA

SITE CODE - CCNH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 47.68'N
69° 56.90'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 13246 (NAD 1927)

SITE DESCRIPTION - This site is located in the southern portion of Nauset Harbor, south of the marshlands.

Drive Route 6 to Orleans to Route 6A to Eldridge Parkway. Cross Route 28 continuing to Main Street and to Nauset Road. Make a left turn onto Doane Road and proceed to the end of the street and park. To the left end of the street are the mussel flats and a tidal creek.

SAMPLING METHOD - Hand collection.

MASSACHUSETTS SITES

Benthic Surveillance

LOCATION - Merrimac River, Plum Island, MA

SITE CODE - MERPI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1984-1985)

NOMINAL SITE CENTER - 42° 45.0'N
70° 45.0'W

WATER DEPTH AT
NOMINAL CENTER - 23 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	MR2	42° 48.5'	70° 47.5'
1984	MR3	42° 43.3'	70° 44.0'
1985	MR1	42° 50.9'	70° 47.7'
1985	MR2	42° 48.5'	70° 47.5'
1985	MR3	42° 43.3'	70° 44.0'

LOCATED ON NOS CHART - 13278 (NAD 1927; December 14, 1985)

SITE DESCRIPTION - This site is located 1.8 nautical miles east-northeast of the cupola (domed roof structure) on Plum Island, 3.4 nautical miles north of the R "2" Fl R 4s BELL buoy east of Castle Neck, and 4.0 nautical miles south of the RW "MR" Mo(A) WHISTLE buoy at the mouth of the Merrimac River.

LOCATION - Salem Harbor, Folger Point, MA

SITE CODE - SALFP

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1984-1986, 1988-1990)

NOMINAL SITE CENTER - 42° 32.2'N
70° 49.6'W

WATER DEPTH AT
NOMINAL CENTER - 1.5 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	SH1	42° 31.0'	70° 52.4'
1984	SH2	42° 31.5'	70° 51.6'
1984	SH3	42° 32.3'	70° 51.0'
1985	SH1	42° 31.0'	70° 52.4'

MASSACHUSETTS SITES

1985	SH2	42° 31.5'	70° 51.6'
1985	SH3	42° 32.3'	70° 51.0'
1985	SH4	42° 31.3'	70° 52.0'
1986	SH1	42° 31.0'	70° 52.4'
1986	SH2	42° 31.5'	70° 51.6'
1986	SH3	42° 32.3'	70° 51.0'
1988	A	42° 31.5'	70° 51.6'
1988	B	42° 32.3'	70° 51.0'
1988	C	42° 31.3'	70° 52.0'
1989	A	42° 32.2'	70° 49.9'
1989	B	42° 32.2'	70° 49.6'
1989	C	42° 32.1'	70° 49.2'
1990	A	42° 31.0'	70° 52.4'
1990	B	42° 31.5'	70° 51.6'
1990	C	42° 32.3'	70° 51.0'

LOCATED ON NOS CHART - 13274 (NAD 1927, July 7, 1984)

SITE DESCRIPTION - This site is located in the middle of Salem Sound, east of Marblehead and west of Great Misery Island. It is 0.5 nautical miles north of N"6" marking Cut Throat Shoal, 0.4 nautical miles northwest of N"8", and 0.6 nautical miles southeast of Haste Shoal.

LOCATION - Boston Harbor, President Roads, MA

SITE CODE - BOSPR

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1984-1986)

NOMINAL SITE CENTER - 42° 20.0'N
70° 59.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 12 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	BH1	42° 20.9'	70° 58.0'
1984	BH2	42° 19.8'	70° 58.2'
1984	BH3	42° 19.7'	71° 00.1'
1985	BH2	42° 19.8'	70° 58.2'
1985	BH3	42° 19.7'	71° 00.1'
1985	BH4	42° 20.7'	70° 58.9'
1985	BH5	42° 20.5'	71° 00.2'

MASSACHUSETTS SITES

1986	BH1	42° 20.9'	70° 58.0'
1986	BH2	42° 19.8'	70° 58.2'
1986	BH3	42° 19.7'	71° 00.1'

LOCATED ON NOS CHART - 13270 (NAD 1927; May 4, 1985)

SITE DESCRIPTION - This site is located in the President Roads ship channel, 0.1 nautical miles southwest from the R"2" Fl R 4 sec channel marker, 0.2 nautical miles northwest from the "1" Fl 4 sec channel marker, 0.4 nautical miles northeast of the Fl G 4 s channel marker, and 0.4 nautical miles southeast of channel marker R "4" Fl R 4sec BELL.

LOCATION - Boston Harbor, Deer Island, MA

SITE CODE - BOSDI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1987-1990)

NOMINAL SITE CENTER - 42° 19.9'N
70° 58.1'W

**WATER DEPTH AT
NOMINAL CENTER** - 14 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	42° 20.8'	70° 57.9'
1987	B	42° 19.9'	70° 58.1'
1987	C	42° 19.8'	70° 59.9'
1988	A	42° 20.6'	70° 58.0'
1988	B	42° 21.0'	70° 58.2'
1988	C	42° 21.0'	70° 58.6'
1989	A	42° 21.0'	70° 58.4'
1989	B	42° 20.6'	70° 58.2'
1989	C	42° 20.6'	70° 58.0'
1990	A	42° 20.8'	70° 58.7'
1990	B	42° 20.8'	70° 58.3'
1990	C	42° 20.7'	70° 58.1'

LOCATED ON NOS CHART - 13270 (NAD 1927; May 4, 1985)

MASSACHUSETTS SITES

SITE DESCRIPTION - This site center is located in the President Roads ship channel, north of Sculpin Ledge Channel and south of Deer Island Flats. It is located 0.8 nautical miles southeast of W "C" Fl 4sec marker which is on the southeast edge of Governors Island Flats, 0.8 nautical miles southwest of the Deer Island marker (Alt Fl W & R 10sec 53ft 10M HORN Occ 4sec), and 0.4 nautical miles west northwest of the G "13" Fl G 2.5s, which is north of Long Island.

LOCATION - Boston Harbor, Quincy Bay, MA

SITE CODE - BOSQB

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1986, 1989-1990)

NOMINAL SITE CENTER - 42° 18.4'N
70° 58.4'W

**WATER DEPTH AT
NOMINAL CENTER** - 6 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	QB1	42° 17.5'	70° 59.2'
1986	QB2	42° 17.2'	70° 58.0'
1986	QB3	42° 18.4'	70° 58.4'
1989	A	42° 18.2'	70° 59.1'
1989	B	42° 17.9'	70° 59.2'
1989	C	42° 17.6'	70° 59.5'
1990	A	42° 18.3'	70° 58.6'
1990	B	42° 18.4'	70° 58.5'
1990	C	42° 18.6'	70° 58.4'

LOCATED ON NOS CHART - 13270 (NAD 1927; May 4, 1985)

SITE DESCRIPTION - The site center is located 0.1 nautical miles south of R N "8" channel marker, which is south of West Head, southeast of Moon Head, west of Rainsford Island, and north of Sunken Ledge.

MASSACHUSETTS SITES

LOCATION - Boston Harbor, Hull Bay, MA

SITE CODE - BOSHB

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1989- 1990)

NOMINAL SITE CENTER - 42° 17.1'N
70° 54.4'W

WATER DEPTH AT
NOMINAL CENTER - 12 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	42° 17.9'	70° 53.9'
1989	B	42° 17.6'	70° 54.0'
1989	C	42° 17.3'	70° 54.2'
1990	A	42° 17.0'	70° 54.5'
1990	B	42° 17.2'	70° 54.7'
1990	C	42° 17.4'	70° 54.0'

LOCATED ON NOS CHART - 13270 (NAD 1927; November 20, 1982)

SITE DESCRIPTION - The site center is located at the western edge of Hull Bay; 0.5 nautical miles northwest of Bumpkin Island, 0.3 nautical miles west of privately maintained buoy C"1A", and 0.25 nautical miles south-southeast of Fl 4 sec buoy "1".

LOCATION - Boston Harbor, Mystic River, MA

SITE CODE - BOSMR

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1989-1990)

NOMINAL SITE CENTER - 42° 23.2'N
71° 03.2'W

WATER DEPTH AT
NOMINAL CENTER - 15 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	42° 23.1'	71° 03.0'
1989	B	42° 23.1'	71° 03.2'
1989	C	42° 23.2'	71° 03.5'
1990	A	42° 23.2'	71° 02.9'
1990	B	42° 23.2'	71° 03.3'
1990	C	42° 23.2'	71° 03.7'

MASSACHUSETTS SITES

LOCATED ON NOS CHART - 13270 (NAD 1927, May 4, 1985)

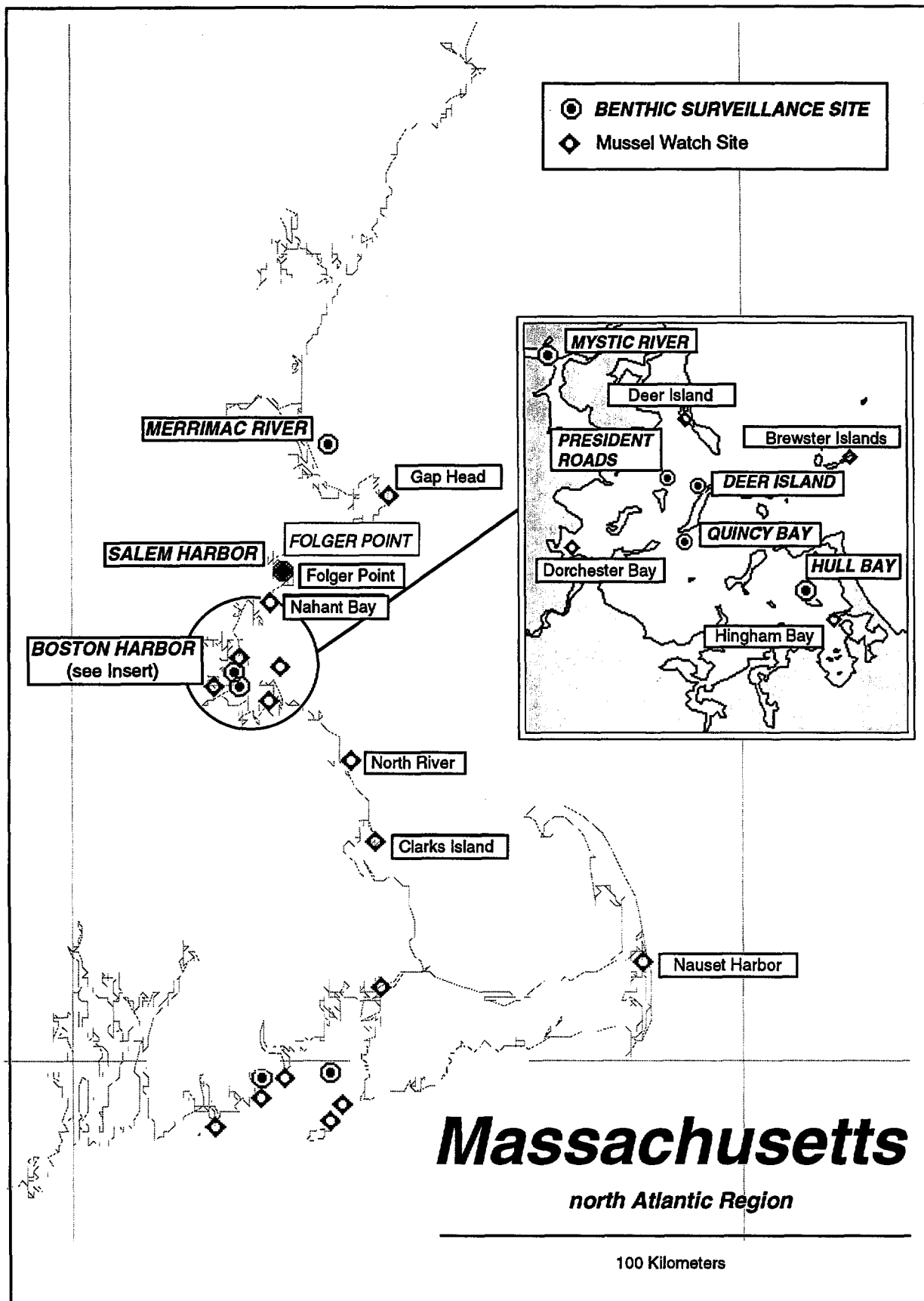
SITE DESCRIPTION - The site center is located near the mouth of the Island End River, 0.01 nautical miles north of the Mystic Wharf and just northeast of the N"2" marker, and 0.25 nautical miles up river from the Mystic River-Tobin Memorial Bridge.

71°24'W

69°42'W

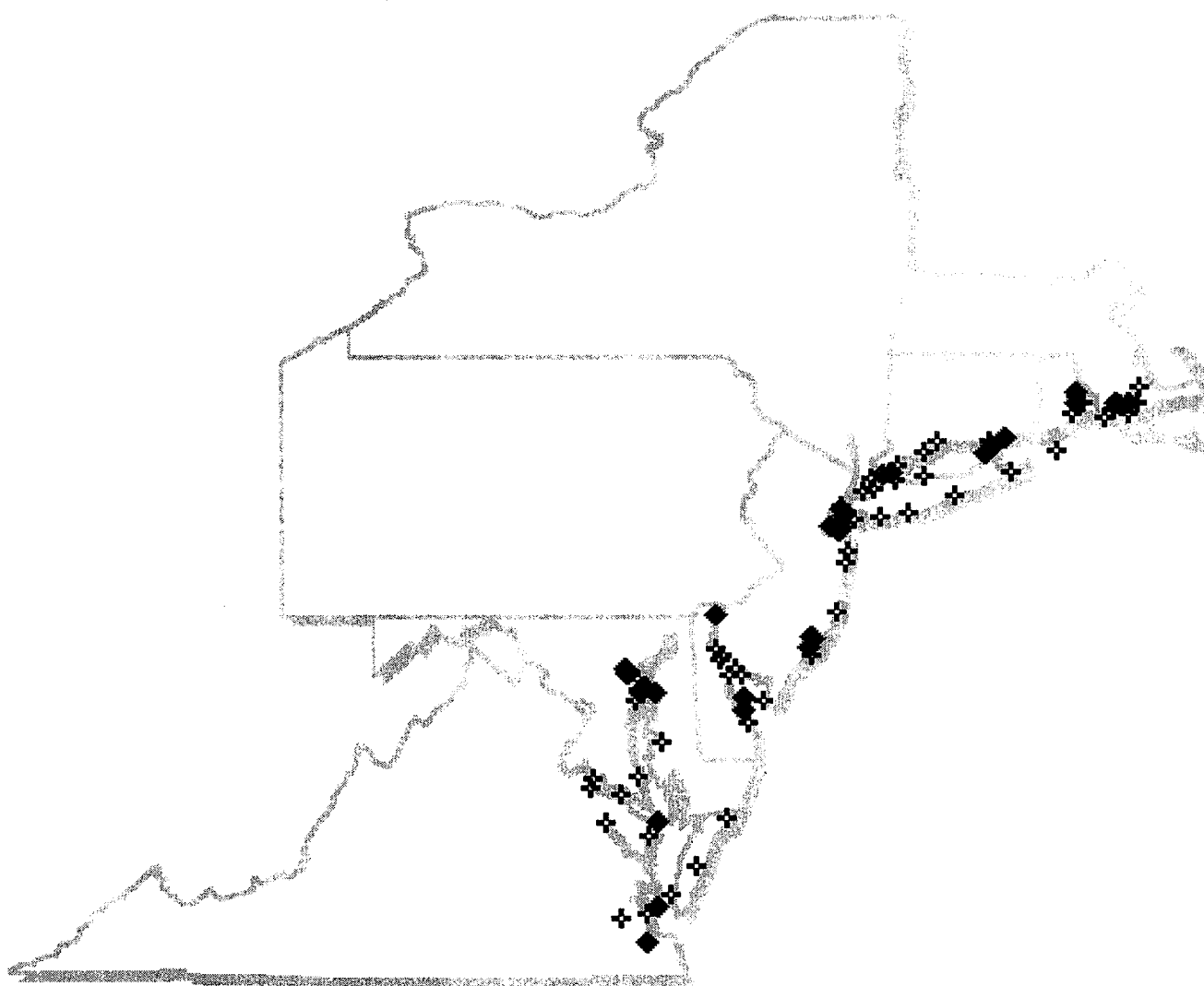
42°42'N

41°36'N



NATIONAL STATUS & TRENDS PROGRAM

Middle Atlantic Region



+ Mussel Watch Project
◆ Benthic Surveillance Project

MASSACHUSETTS SITES

Mussel Watch

SITE - Buzzards Bay, Naushon Island, MA

SITE CODE - BBNI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 30.77'N (Bivalve) **WATER DEPTH** - 0.1 meter
70° 44.49'W

41° 30.60'N (Sediment)
70° 44.26'W

LOCATED ON NOS CHARTS - 13218 and 13229 (NAD 1927)

SITE DESCRIPTION - The bivalve site is located on the northwestern shore of the largest and southernmost of the Weepecket Islands. Bivalves are found around and under rocks, in an intertidal area. Sediments are collected in the waters 250 meters off the southeastern shore of the large island.

SAMPLING METHOD - Hand collection.

SITE - Buzzards Bay, West Falmouth, MA

SITE CODE - BBWF

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 36.50'N (Bivalve) **WATER DEPTH** - 0.1 meter
70° 39.35'W

41° 36.77'N (Sediment)
70° 40.37'W

LOCATED ON NOS CHART - 13230 (NAD 1927)

SITE DESCRIPTION - Bivalves are found among the rocks near the north shore at the entrance of the West Falmouth Harbor. Sediments are found at a location approximately 1 nautical mile west of the bivalve site in water depths of 12 meters.

SAMPLING METHOD - Hand collection.

MASSACHUSETTS SITES

SITE - Buzzards Bay, Cape Cod Canal, MA

SITE CODE - BBCC

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 44.37'N
70° 37.02'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 13229 (NAD 1927)

SITE DESCRIPTION - Intertidal bivalves are collected at the southwest corner of the west entrance to Cape Cod Canal.

SAMPLING METHOD - Hand collection.

SITE - Buzzards Bay, Angelica Rock, MA

SITE CODE - BBAR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 34.63'N (Bivalves) **WATER DEPTH** - 0.3 meter
70° 51.78'W

41° 35.22'N (Sediment)
70° 52.70'W

LOCATED ON NOS CHARTS - 13230 (NAD 1927)

SITE DESCRIPTION - Mussels are collected intertidally at the southernmost tip of Angelica Rock. Access is most easily achieved by launching a boat from Sconticut Neck. Mussel populations are intertidal and located in tide pools. Sediments are collected west of Angelica Rock, east of Fort Phoenix Entrance Channel, and southeast of Fort Rodmen at a depth of 10 meters.

SAMPLING METHOD - Hand collection.

MASSACHUSETTS SITES

SITE - Buzzards Bay, Round Hill, MA

SITE CODE - BBRH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 32.45'N
70° 55.52'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 13230 (NAD 1927)

SITE DESCRIPTION - Mussels were collected from subtidal extensions of intertidal beds at the base of Round Hill during 1986 and 1987 sampling years. The mussels occur as patches attached to rocks and gravel located at the base of the Round Hill radome (radar antenna protective housing). This is an exposed area and is subject to extreme weather. Collections during 1988-1990 were made off Dumping Rocks.

SAMPLING METHOD - Intertidal hand collection.

SITE - Buzzards Bay, Goosebury Neck, MA

SITE CODE - BBN

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 28.68'N (Bivalve)
71° 02.13'W

WATER DEPTH - 0.1 meter

41° 28.84'N (Sediment)
71° 01.34'W

LOCATED ON NOS CHART - 13228 (NAD 1927)

SITE DESCRIPTION - Mussels are collected from the southernmost shore of Goosebury Neck from tide pools, and from the lower intertidal reaches in the cove east of Southwest Rock.

SAMPLING METHOD - Hand collection.

MASSACHUSETTS SITES

Benthic Surveillance

LOCATION- Buzzards Bay, West Island, MA

SITE CODE - BUZWI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1984 -1986, 1988, 1990)

NOMINAL SITE CENTER - 41° 35.0'N
70° 45.0'W

WATER DEPTH AT
NOMINAL CENTER - 12 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	BB1	41° 36.6'	70° 45.2'
1984	BB2	41° 33.3'	70° 41.4'
1984	BB3	41° 32.5'	70° 47.8'
1984	BB4	41° 33.4'	70° 52.6'
1984	BB80	41° 29.5'	70° 53.9'
1985	BB1	41° 36.6'	70° 45.2'
1985	BB2	41° 33.3'	70° 41.4'
1985	BB3	41° 32.5'	70° 47.8'
1985	BB4	41° 33.4'	70° 52.6'
1986	BB1	41° 36.6'	70° 45.2'
1986	BB3	41° 32.5'	70° 47.8'
1986	BB4	41° 33.4'	70° 52.6'
1988	A	41° 34.9'	70° 45.3'
1988	B	41° 35.9'	70° 44.9'
1988	C	41° 35.0'	70° 44.0'
1990	A	41° 34.9'	70° 45.2'
1990	B	41° 35.9'	70° 44.8'
1990	C	41° 35.0'	70° 44.0'

LOCATED ON NOS CHART - 13230 (NAD 1927; May 4, 1985)

SITE DESCRIPTION - This site center is located east of West Island and north of Naushon Island. A more exact position is 1.80 nautical miles southwest from the Fl G "11" 4 sec BELL buoy, 2.31 nautical miles northeast of the R "10" Fl R 4 sec GONG buoy, and 2.3 nautical miles southeast of Cormorant Rock.

MASSACHUSETTS SITES

LOCATION- New Bedford Harbor, Clarks Point, MA **SITE CODE** - NBHCP

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1988)

NOMINAL SITE CENTER - 41° 35.0'N
70° 53.5'W

**WATER DEPTH AT
NOMINAL CENTER** - 8 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	41° 34.9'	70° 54.0'
1988	B	41° 35.0'	70° 53.5'
1988	C	41° 35.4'	70° 53.2'

LOCATED ON NOS CHART - 13230 (NAD 1927; May 4, 1985)

SITE DESCRIPTION - This site center is located west of the New Bedford Entrance Channel and northwest of North Ledge. The exact position is 0.7 nautical miles south of Clarks Point, 1.4 nautical miles northeast of buoy R N"6" on Bents Ledge, and 0.8 nautical miles northwest of buoy C"9" G on North Ledge.

71°24'W

69°42'W

42°42'N

41°36'N

Massachusetts

middle Atlantic region

100 Kilometers

Cape Cod Canal
Angelica Rock
NEW BEDFORD HARBOR
Round Hill
Goosebury Neck
BUZZARDS BAY
West Falmouth
Naushon Island

⊙ BENTHIC SURVEILLANCE SITE
◆ Mussel Watch Site

RHODE ISLAND SITES

Mussel Watch

SITE - Narragansett Bay, Mount Hope Bay, RI

SITE CODE - NBMH

TARGET SPECIES - No bivalves were collected at this site.

SITE CENTER COORDINATES - 41° 40.60'N
71° 13.57'W

WATER DEPTH - 9 meters

LOCATED ON NOS CHARTS - 13221, 13223, and 13224 (NAD 1927)

SITE DESCRIPTION - This sediment site is located 0.6 nautical miles due east of Mount Hope, located on Bristol Neck, and 0.4 nautical miles north of north of buoy CM C "3A."

SAMPLING METHOD - Sediments were collected using a Young-modified Van Veen Grab.

SITE - Narragansett Bay, Dyer Island, RI

SITE CODE - NBDI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 36.20'N
71° 17.37'W

WATER DEPTH - 20 meters

LOCATED ON NOS CHART - 13221 (NAD 1927)

SITE DESCRIPTION - Subtidal mussels are collected during all years at a site 1 nautical mile north of Dyer Island. Transects are northerly at a water depth of 22-28 meters of water due to the high degree of mortality in the shallower waters surrounding the island. Sediments are anoxic muds, with the best sediments located in water 20-25 meters deep, and the less acceptable sediments (dense shell) located in water depths of 10-15 meters or 23-28 meters.

SAMPLING METHOD - Dredge collection.

RHODE ISLAND SITES

SITE - Narragansett Bay, Patience Island, RI

SITE CODE - NBPI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 39.37'N
71° 21.13'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 13221 (NAD 1927)

SITE DESCRIPTION - Intertidal mussels are collected in a cove on the east side of Patience Island, between Patience and Providence Islands. A boat will be needed for access from the mainland. Because of the shallow water depth at the mussel location, landings are made on Patience Island a little to the north of the site.

SAMPLING METHOD - Rake collection.

SITE - Narragansett Bay, Dutch Island, RI

SITE CODE - NBDU

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 30.08'N
71° 23.57'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 13221 and 13223 (NAD 1927)

SITE DESCRIPTION - In 1986 collections were made from dense subtidal mussel populations along the eastern shore of Dutch Island. During 1987 five dredge tows were required to collect sufficient bivalves. The first three tows were north/south transects radiating outward from Dutch Island. The final two tows — the most successful — were along an east/west transect from the Northeast corner of Dutch Island over a shoal area. In 1988 the mussel population was destroyed by starfish, making collection impossible. Since 1989, intertidal collections have been made from the rocks at Fox Hill. In 1986 and 1987 the site acronym was NBCI.

Shell-free, fine-grain sediment is found east of the site center and the bivalve collection site at water depths of 4-5 meters.

This site is a former Environmental Protection Agency mussel watch site (See Table 7).

SAMPLING METHOD - Dredge collection.

RHODE ISLAND SITES

SITE - Block Island Sound, Block Island, RI

SITE CODE - BIBI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 11.40'N
71° 35.14'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHARTS - 13217 and 13219 (NAD 1927)

SITE DESCRIPTION - Mussels are collected from subtidal extensions of intertidal beds approximately 17 meters east of the northeast breakwater at the inside entrance to Great Salt Pond.

Sediments are fine-grained anoxic muds collected from depths of 8-10 meters, in a cove northeast of the Coast Guard Station and behind the headland at the northeast entrance to Great Salt Pond.

SAMPLING METHOD - Rake collection.

RHODE ISLAND SITES

Benthic Surveillance

LOCATION - Narragansett Bay, Conanicut Island, RI **SITE CODE** - NARCI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1984-1986)

NOMINAL SITE CENTER - 41° 35.0'N
71° 22.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 7 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	NB1	41° 39.5'	71° 19.3'
1984	NB2	41° 38.1'	71° 23.3'
1984	NB3	41° 33.5'	71° 23.7'
1984	NB4	41° 32.6'	71° 19.6'
1985	NB1	41° 39.5'	71° 19.3'
1985	NB2	41° 38.1'	71° 23.3'
1985	NB3	41° 33.5'	71° 23.7'
1985	NB4	41° 32.6'	71° 19.6'
1986	NB1	41° 39.5'	71° 19.3'
1986	NB2	41° 38.1'	71° 23.3'
1986	NB3	41° 33.5'	71° 23.7'
1986	NB4	41° 32.6'	71° 19.6'

LOCATED ON NOS CHARTS - 13221 (October 12, 1985) and 13223 (December 29, 1984) (both NAD 1927)

SITE DESCRIPTION - The center of activities for this site is located northeast of Conanicut Point on Conanicut Island in the West Passage, 0.4 nautical miles north of the R "2" Fl R 4 sec BELL buoy and 1.8 nautical miles southeast of the RG Fl R (2+1) 6s buoy.

RHODE ISLAND SITES

LOCATION - Narragansett Bay, Prudence Island, RI

SITE CODE - NARPI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1988, 1990)

NOMINAL SITE CENTER - 41° 40.4'N
71° 21.2'W

**WATER DEPTH AT
NOMINAL CENTER** - 14 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	41° 40.2'	71° 21.5'
1988	B	41° 40.4'	71° 21.2'
1988	C	41° 40.7'	71° 21.1'
1990	A	41° 40.2'	71° 21.5'
1990	B	41° 40.4'	71° 21.2'
1990	C	41° 40.7'	71° 21.1'

LOCATED ON NOS CHARTS - 13221 (October 12, 1985) and 13223 (December 29, 1984) (NAD 1927)

SITE DESCRIPTION - This site is located 0.4 nautical miles north of Prudence Island, 1.2 nautical miles south-southeast of Rocky Point peninsula, and 0.8 nautical miles northwest of Providence Point on the northern tip of Prudence Island.

71°45'W

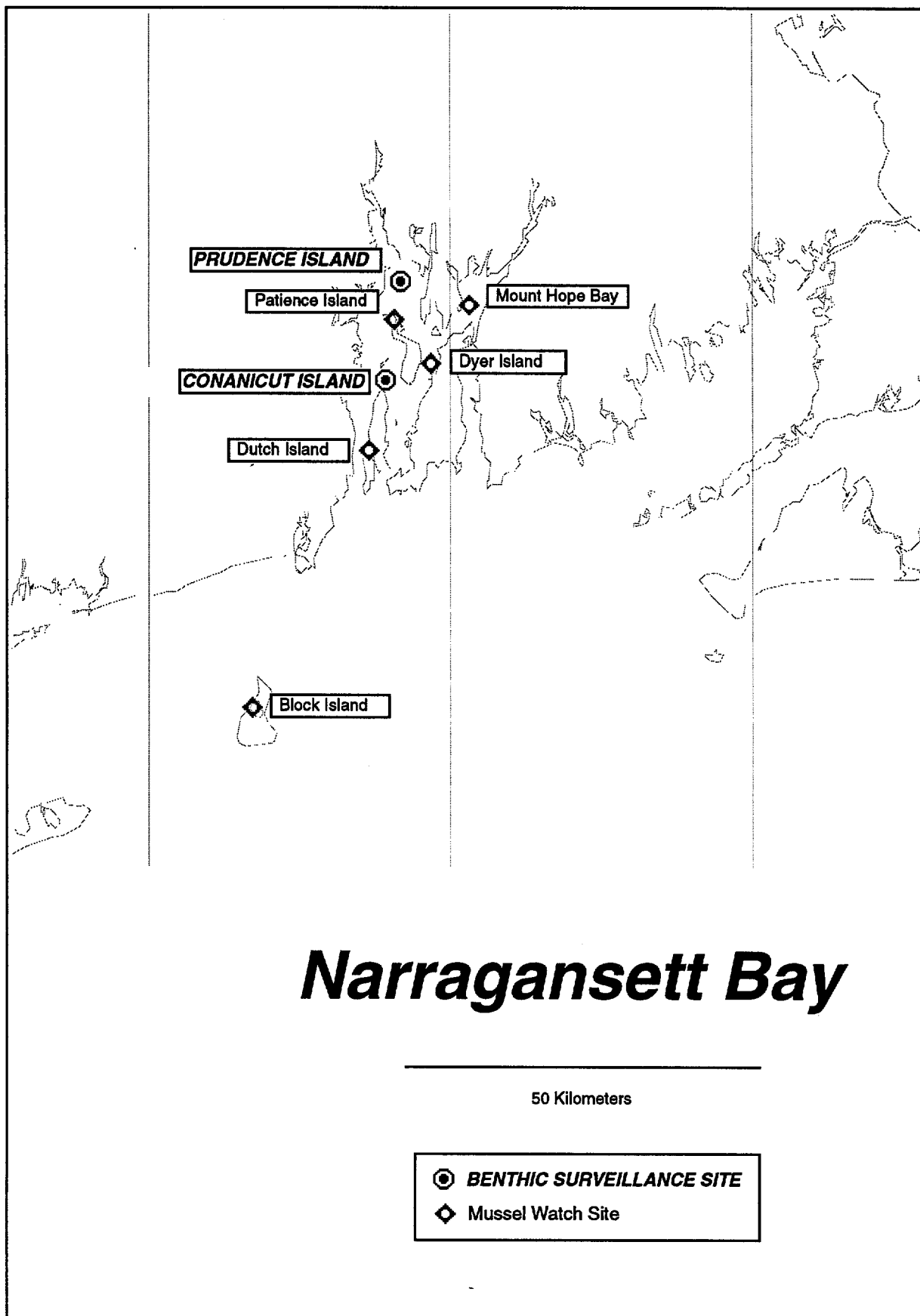
71°15'W

70°45'W

41°52'N

41°31'N

41°10'N



CONNECTICUT SITES

Mussel Watch

SITE - Long Island Sound, Connecticut River, CT

SITE CODE - LICR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 41° 15.83'N
72° 20.50'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHARTS - 12372 (NAD 1927)

SITE DESCRIPTION - The site center is northeast of channel marker N"2", between the channel and the west side of the east breakwater. Bivalve collections are intertidal composite samples taken by hand from sparse populations at the lower edges of the channel side of the west breakwater. The midpoint of this breakwater's base contains a dense mussel population. Access to the bivalve site is from Saybrook Point across the causeway at South Cove. The first left after the causeway leads to Lynde Point via a private road.

Fine grained sediments lie between the channel and the west breakwater. North of this area the grain size increases. The boat is launched from the Old Saybrook Connecticut State Launch Ramp beneath I-95. The site is due south, approximately 4 nautical miles from the ramp.

CAUTION: Currents in this area can be fast and care should be taken during sampling.

SAMPLING METHOD - Hand collection.

SITE - Long Island Sound, New Haven, CT

SITE CODE - LINH

TARGET SPECIES - *Mytilus edulis* (blue mussel)
Crassostrea virginica (American oyster)

SITE CENTER COORDINATES - 41° 15.40'N
72° 56.67'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 12354 (NAD 1927)

CONNECTICUT SITES

SITE DESCRIPTION - Intertidal mussels are collected from the easternmost rock jetty on West Haven beach. Access is from the pier at the intersection of Washington Street and Beach Street in the Savin Rock area of New Haven. Oysters were also sampled in 1989 along with the mussels for an intercomparison study.

SAMPLING METHOD - Hand collection.

SITE - Long Island Sound, Housatonic River, CT

SITE CODE - LIHR

TARGET SPECIES - *Mytilus edulis* (blue mussel)
Crassostrea virginica (American oyster)

SITE CENTER COORDINATES - 41° 10.07'N
73° 06.58'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 12364 (NAD 1927, January 10, 1987)

SITE DESCRIPTION - Subtidal mussels and oysters occupy this site. The site center is very close to Fl g 6s 30ft "7" beacon. In 1986 mussels were dredged between the Housatonic Marina and the Japanese Restaurant Tomikos. During 1987 and 1988 sampling season, subtidal collections were made with a rake at the base of Fl g 6s 30ft "7" beacon. Access to this area is from Route 113 towards the Igor Sigorsky Airport, through Short Beach Park via Short Beach Park Road. From the north end of the parking lot it is possible to wade to the light Fl g 6s 30ft "7" beacon at low tide. Oyster collections, for species comparison with the blue mussel, were made 25 meters south southwest of Fl g 6s 30ft "7" beacon, in 1988 and 1989.

The Housatonic River is a high energy (4-knot current) low deposition environment. The combination of its shallow depth and the dense oyster and mussel shell accumulation, preclude the acquisition of fine grained sediments.

SAMPLING METHOD - Dredge or rake collection. Accessible by foot using waders.

CONNECTICUT SITES

SITE - Long Island Sound, Sheffield Island, CT

SITE CODE - LISI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

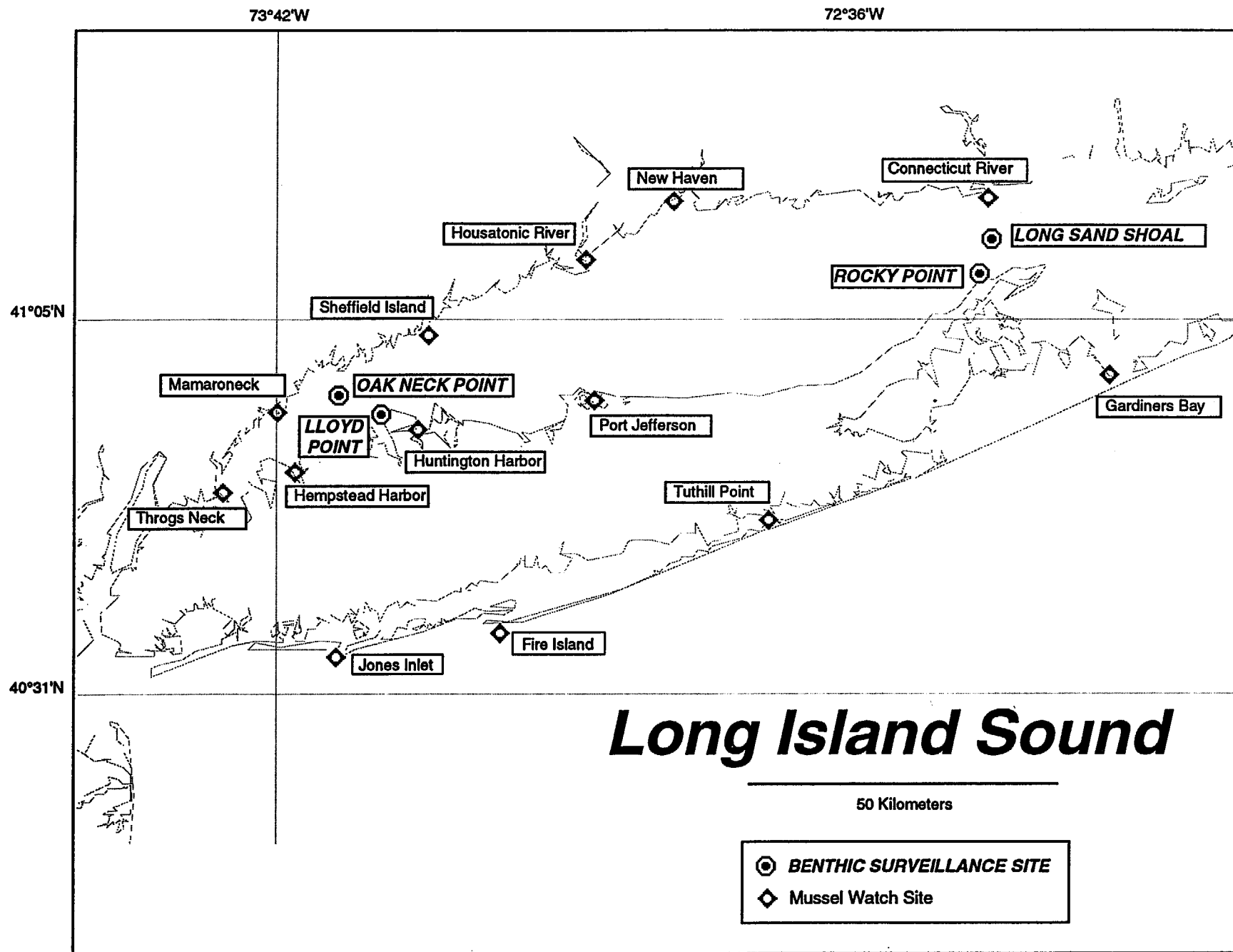
SITE CENTER COORDINATES - 41° 03.40'N
73° 24.77'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHARTS - 12364 (NAD 1927)

SITE DESCRIPTION - The site is located in intertidal beds on the northern shore of the island. Mussels are found approximately 67 meters east of a pier and covered dock, and are located in and around marsh grass. Site is accessed by boat from the mainland with a landing at a convenient location near the site. Caution is advised because of numerous large rocks.

SAMPLING METHOD - Hand collection.



NEW YORK SITES

Mussel Watch

SITE - Long Island Sound, Mamaroneck, NY

SITE CODE - LIMR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 56.47'N
73° 42.03'W

WATER DEPTH - 0.4 meter

LOCATED ON NOS CHARTS - 12366 and 12364 (NAD 1927)

SITE DESCRIPTION - From Mamaroneck proceed east on Boston Post Road (Route 1), take a right at Oakland Beach Road, then right onto Milton Road. At the dead end on Milton Road, make a left. The American Yacht Club is at the end of the road. The 1990 collections were made at beds approximately 100 meters west of the American Yacht Club gates.

At the mouth of Mamaroneck Harbor is a longstanding mussel bed. The mussel population is found between Milton Point and Hen Island. In 1986 collections were made by dredging along the southeast shore of Hen Island. In 1987 and 1988 collections were made subtidally by rake immediately south of the American Yacht Club breakwater and ramp.

SAMPLING METHOD - Dredge or rake collection.

SITE - Long Island Sound, Throgs Neck, NY

SITE CODE - LITN

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 49.17'N
73° 48.07'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 12364 (NAD 1927)

SITE DESCRIPTION - The established site center is southeast of the breakwater pilings and northeast of the bivalve site. Bivalve collections are near the north end of the Throgs Neck Bridge, on the eastern shore of Locust Point. The bivalve population is located east of Throgs Neck toll booths, opposite the south light pole of the booths. Composite samples can be collected by either fork or rake from dense intertidal populations which extend subtidally north in the rocky area. The Triborough Bridge and Tunnel Authority, located at the toll booths off Exit 8 on Route 295, are to be notified at the time of bivalve collection if access is from shore.

NEW YORK SITES

Sediments composed of 55-98% silt + clay are located to the east and south of the site center. Locations north and west of the site center are primarily coarse-grained sediment. From a launch ramp at Evers Seaplane Base the site is 2 nautical miles southwest.

SAMPLING METHOD - Rake collection.

SITE - Long Island Sound, Hempstead Harbor, NY

SITE CODE - LIHH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 51.14'N
73° 40.14'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 12364 (NAD 1927)

SITE DESCRIPTION - Mussel beds are located at Mott Point approximately halfway into Hempstead Harbor. Mussels are collected from the northernmost breakwater (beginning east of a large rock painted red on its northern face) north to a rock outcrop. Acceptable sediments are found at 6+ meters depth approximately 100 meters offshore of the bivalve collection area. Inshore sediments are rock and sand. This site is intertidal with subtidal extensions.

SAMPLING METHOD - Fork or rake collection.

SITE - Long Island Sound, Huntington Harbor, NY

SITE CODE - LIHU

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 55.00'N
73° 25.87'W

WATER DEPTH - 0.4 meter

LOCATED ON NOS CHART - 12364 (NAD 1927; January 10, 1987)

NEW YORK SITES

SITE DESCRIPTION - The site center is approximately 230 meters northwest of N "2" on the east side of East Beach. Bivalves are collected by rake from the southernmost point of East Beach in intertidal beds, or from sand spit off of marsh grass islands. Composite samples within a 5-7 cm size range are taken subtidally or from tide pools. Access to East Beach is via a beach access road at Target Rock Wildlife Refuge, located off West Neck Road.

Sediments in this area are variable and range from 35-55% silt + clay. Sediments containing sand, gravel, shells, and small clams are located north and east of N "2". The large amount of shell in this area was implanted as clutch for a previous oyster business. Fine grain, anoxic, unconsolidated sediments are located in a depositional area west of N "2" near the entrance of Lloyd Harbor. From the ramp off Mill Dam Road in South Huntington Harbor it is 2 nautical miles north-northeast to this site.

SAMPLING METHOD - Fork and rake collection.

SITE - Long Island Sound, Port Jefferson, NY

SITE CODE - LIPJ

TARGET SPECIES - *Mytilus edulis* (blue mussel)
Crassostrea virginica (American oyster)

SITE CENTER COORDINATES - 40° 57.57'N
73° 05.52'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 12364 (NAD 1927)

SITE DESCRIPTION - The sampling site is near the mouth of the harbor. Mussel populations are intertidal. Collections are from the subtidal reaches, west of the rock breakwater and directly under a large white house on the beach cliff. The site center is in northwest Port Jefferson Harbor at the mouth of Setauket Harbor, northeast of a small, L-shaped rock breakwater. In 1989, oysters were sampled along with the mussels.

Sediment samples are taken from the mouth of Setauket Harbor at depths of about 15 meters.

SAMPLING METHOD - Fork collection.

NEW YORK SITES

SITE - Long Island, Gardiners Bay, NY

SITE CODE - LIGB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 59.90'N
72° 06.68'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 13205 (NAD 1927)

SITE DESCRIPTION - The site is near Fresh Pond north of Devon Yacht Club. Due to extensive barnacle growth these beds are not commercially harvested. During 1990, the mussels were collected off the rock-filled wood groin at Albert's Landing. This site is intertidal.

SAMPLING METHOD - Hand collection.

SITE - Moriches Bay, Tuthill Point, NY

SITE CODE - MBTH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 46.65'N
72° 45.37'W

WATER DEPTH - 0.8 meter

LOCATED ON NOS CHARTS - 12352 (NAD 1927, November 15, 1986)

SITE DESCRIPTION - The site center for bivalves and sediments is located in the channel between Tuthill Point and "Hoot and Holler" Island (south of Tuthill Point). Collections were made at the subtidal extensions of intertidal populations on the northern shore of a sand spit on Hoot and Holler Island during 1986. In 1987 and 1988 collections were intertidal from dense sporadic clumps of mussels ranging from 1-8 cm in size. The area tends to shoal and is accessible only with a boat from the Las Brisas fishing station on Tuthill Road.

SAMPLING METHOD - Hand collection.

NEW YORK SITES

SITE - Long Island, Fire Island Inlet, NY

SITE CODE - LIFI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 37.68'N
73° 17.16'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 12352 (NAD 1927; November 15, 1986)

SITE DESCRIPTION - Access the site by parking at Field 2 Parking Lot off of the Robert Moses Causeway. Cross the east-west causeways (by foot) to the north side of the island between the "B3" and "B4" signs. Follow the path near the "Swimming Prohibited" sign over the dunes and onto the beach. The site is located in the vicinity of Fl G 4 sec "13." Mussels can be located along the north side of Fire Island approximately two-thirds of a mile east of Democrat Point in shallow water. Mussels are attached to scattered rocks. This site is in a subtidal area.

SAMPLING METHOD - Subtidal hand-rake collection.

SITE - Long Island, Jones Inlet, NY

SITE CODE - LIJI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 35.81'N
73° 35.45'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 12352 (NAD 1927)

SITE DESCRIPTION - To locate the bivalve site, park on the roadside before the bridge connecting Alder Island to Long Beach Island. Walk down to the right through the trees to the beach. The mussels are located to the left on the rock bed.

SAMPLING METHOD - Sub tidal hand-rake collection.

NEW YORK SITES

SITE - Hudson-Raritan Estuary, Jamaica Bay, NY

SITE CODE - HRJB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 34.13'N
73° 53.88'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 12350 (NAD 1927)

SITE DESCRIPTION - This site is located within Gateway National Recreation Area. Intertidal collections are made from the eastern side of the westernmost jetty of the Roxbury community area. Mussels have been collected on the rocky shore and on the jetty itself. Sparse populations of small bivalves are located between the rocks and at the base jetty.

SAMPLING METHOD - Hand collection.

SITE - Hudson-Raritan Estuary, Upper Bay, NY

SITE CODE - HRUB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 41.38'N
74° 02.55'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 12327 (NAD 1983)

SITE DESCRIPTION - Bivalve collections have been made from the rocks at the base of the Statue of Liberty. Mussels are intertidally collected from the rocks and beneath the northeast pier of the island. The majority of the mussels are not attached to the rocks but are buried in the sand between the rocks. Collections are complicated by very sparse populations and surging waves (even at low tide) from ship traffic. Access to the island is by boat launched from Liberty park.

The sediment site established during 1986 was relocated during 1987 to place it within the 400 meter radius of the bivalve site. The 1987 sediment collections are in water of 8 meters on the northeast side of Liberty Island and southeast of Ellis Island.

SAMPLING METHOD - Subtidal dredge collection.

NEW YORK SITES

SITE - Hudson-Rar. Est., Lower Bay, Swinburne Is., NY **SITE CODE** - HRLB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 33.97'N **WATER DEPTH** - 0.2 meter
74° 03.13'W

LOCATED ON NOS CHARTS - 12327 (NAD 1983)

SITE DESCRIPTION - To reach Swinburne Island from Midland Beach: Take the New Jersey Turnpike south from Newark to 287E. Take the Hyland Avenue exit. Follow Hyland Avenue south to Seaview Road turn left onto Seaview Road, follow to the end, then make a right onto Fort Capaponno Road. On the left will be the Midland Beach Recreation Area. A small boat can be launched from this beach.

Bivalves collected during previous years are from a small cove on the northwest side of Swinburne Island. Collections are intertidal composite samples from the rocks at dead low tide.

Sediments are collected south of the island in waters of 8-11 meters. The sediment from shallow waters around the island at approximately 6 meters were primarily coarse-grained.

SAMPLING METHOD - Hand collection.

NEW YORK SITES

Benthic Surveillance

LOCATION - Long Island Sound, Long Sand Shoal, NY **SITE CODE** - LISLS

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1984-1986)

NOMINAL SITE CENTER - 41° 12.0'N
72° 20.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 45 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	ELI1	41° 14.1'	72° 10.6'
1984	ELI2	41° 15.5'	72° 15.1'
1984	ELI3	41° 10.1'	72° 19.3'
1985	ELI1	41° 14.1'	72° 10.6'
1985	ELI2	41° 15.5'	72° 15.1'
1985	ELI3	41° 10.1'	72° 19.3'
1985	ELI5	41° 07.9'	72° 31.9'
1986	ELI1	41° 14.1'	72° 10.6'
1986	ELI2	41° 15.5'	72° 15.1'
1986	ELI3	41° 10.1'	72° 19.3'

LOCATED ON NOS CHARTS - 12354 (October 4, 1986) and 12372 (April 5, 1986) (both NAD 1927)

SITE DESCRIPTION - This site center is located south of Long Sand Shoal and east of Six Mile Reef, 1.9 nautical miles east of the RW "CF" Mo (A) WHIS, and 2.8 nautical miles southeast of the R "8A" Qk Fl R BELL buoy.

LOCATION - Long Island Sound, Rocky Point, NY

SITE CODE - LISRP

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1988)

NOMINAL SITE CENTER - 41° 08.7'N
72° 24.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 30 meters

NEW YORK SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	41° 09.1'	72° 29.7'
1988	B	41° 10.0'	72° 23.8'
1988	C	41° 08.8'	72° 22.9'

LOCATED ON NOS CHART - 12354 (NAD 1924; October 4, 1986)

SITE DESCRIPTION - The site center is located 2.6 nautical miles west of the Rocky Point lookout tower, 3.2 nautical miles southwest of the RW "CP" Mo (A) WHIS buoy, and 2.3 nautical miles northwest of Inlet Point.

LOCATION - Long Island Sound, Oak Neck Point, NY SITE CODE - LISON

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1984-1986)

NOMINAL SITE CENTER - 40° 58.0'N
73° 35.0'W WATER DEPTH AT
NOMINAL CENTER - 17 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	WLI1	41° 00.7'	73° 22.1'
1984	WLI2	40° 55.9'	73° 35.6'
1985	WLI1	41° 00.7'	73° 22.1'
1985	WLI2	40° 55.9'	73° 35.6'
1985	WLI3	40° 55.1'	73° 41.0'
1985	WLI4	40° 52.8'	73° 44.8'
1986	WLI1	41° 00.7'	73° 22.1'
1986	WLI2	40° 55.9'	73° 35.6'
1986	WLI4	40° 52.8'	73° 44.8'

LOCATED ON NOS CHART - 12363 (NAD 1927; October 18, 1986)

SITE DESCRIPTION - The center of activities for this location is south of Captain Harbor and north of Oak Neck Point. The site is 2.2 nautical miles southeast of the HORN on Great Captain Island, 2.0 nautical miles southwest of the R N "34" buoy, and 1.5 nautical miles west-northwest of the R "32A" Fl R 2.5s BELL.

NEW YORK SITES

LOCATION - Long Island Sound, Lloyd Point, NY

SITE CODE - LISLP

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1988, 1990)

NOMINAL SITE CENTER - 40° 58.5'N
73° 28.9'W

**WATER DEPTH AT
NOMINAL CENTER** - 26 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	40° 56.6'	73° 30.8'
1988	B	40° 58.2'	73° 30.6'
1988	C	40° 58.4'	73° 29.6'
1990	A	40° 58.5'	73° 28.4'
1990	B	40° 58.5'	73° 28.9'
1990	C	40° 58.3'	73° 29.5'

LOCATED ON NOS CHART - 12363 (NAD 1927, October 18, 1986)

SITE DESCRIPTION - The site center is located north of Lloyd Point, 0.9 nautical miles north northeast of Fl 4 sec "15" bell buoy, and 0.9 nautical miles south-southeast of Or "DG" Fl Y 4 sec privately maintained buoy.

LOCATION- Raritan Bay, Upper Bay, NY

SITE CODE - RARUB

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1989, 1990)

NOMINAL SITE CENTER - 40° 39.7'N
74° 02.8'W

**WATER DEPTH AT
NOMINAL CENTER** - 15 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	40° 39.3'	74° 02.4'
1989	B	40° 39.6'	74° 02.7'
1989	C	40° 39.8'	74° 02.7'
1990	A	40° 39.2'	74° 02.8'
1990	B	40° 39.7'	74° 02.8'
1990	C	40° 40.0'	74° 02.9'

NEW YORK SITES

LOCATED ON NOS CHART - 12327 (NAD 1927; March 15, 1987)

SITE DESCRIPTION - The site center is located west of Bay Ridge Flats and east of Jersey Flats. The position is 0.5 nautical miles southeast of Fl G 2.5 sec GONG buoy G"27", 0.4 nautical miles northeast of Fl 4 sec BELL buoy R"26", and 1.1 nautical miles east of the Military Ocean Terminal.

LOCATION - Raritan Bay, Gravesend, NY

SITE CODE - RARGB

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1989, 1990)

NOMINAL SITE CENTER - 40° 35.4'N
74° 01.6'W

**WATER DEPTH AT
NOMINAL CENTER** - 8 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	40° 35.1'	74° 00.8'
1989	B	40° 35.4'	74° 01.1'
1989	C	40° 35.8'	74° 01.3'
1990	A	40° 35.1'	74° 01.2'
1990	B	40° 35.4'	74° 01.6'
1990	C	40° 35.7'	74° 01.5'

LOCATED ON NOS CHART - 12327 (NAD 1927; December 29, 1984)

SITE DESCRIPTION - The center of activities is located southeast of the Verrazano Narrows Bridge. The position is 0.1 nautical miles northwest of I QK F R buoy "WRC," and 0.5 nautical miles south of W N buoy "A."

NEW YORK SITES

LOCATION - Raritan Bay, West Reach, NY

SITE CODE - RARWR

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1989, 1990)

NOMINAL SITE CENTER - 40° 30.4'N
74° 10.2'W

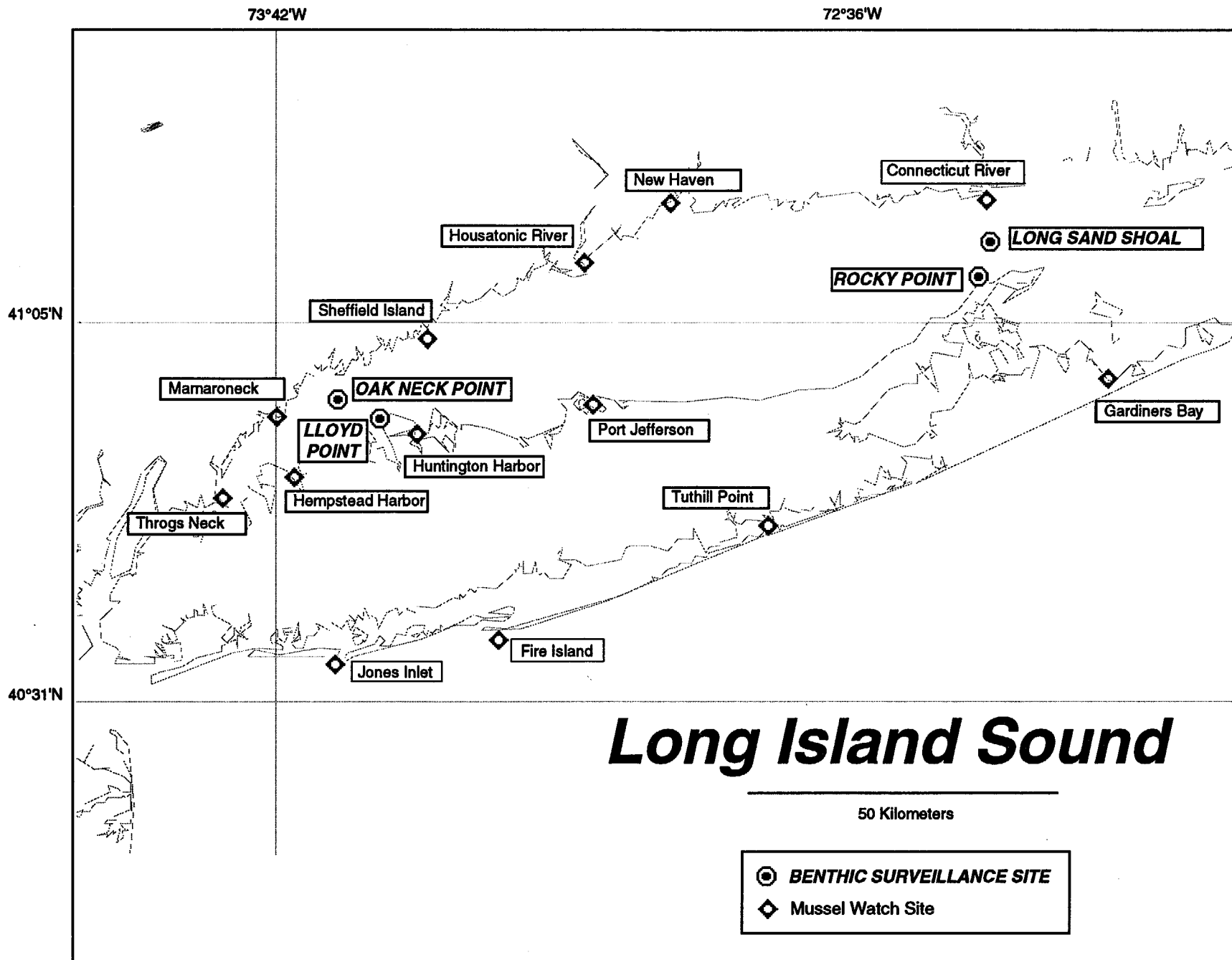
**WATER DEPTH AT
NOMINAL CENTER** - 5 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	40° 30.7'	74° 10.1'
1989	B	40° 30.3'	74° 10.3'
1989	C	40° 30.3'	74° 09.5'
1990	A	40° 30.6'	74° 11.0'
1990	B	40° 30.4'	74° 10.2'
1990	C	40° 29.5'	74° 04.3'

LOCATED ON NOS CHART - 12327 (NAD 1983 (partial); March 15, 1986)

SITE DESCRIPTION - The site center is south of Staten Island, in West Reach Channel on the north edge of Raritan Bay. It is 0.3 nautical miles east-southeast of Fl R BELL buoy R"26," and 0.4 nautical miles west-northwest of Fl 4 sec 8 m"20" light.



NEW JERSEY SITES

Mussel Watch

SITE - Hudson-Raritan Estuary, Raritan Bay, NJ

SITE CODE - HRRB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 31.12' N (Bivalve) **WATER DEPTH** - 0.2 meter
74° 11.05' W

40° 30.13' N (Sediment)
74° 09.71' W

LOCATED ON NOS CHARTS - 12327 (NAD 1983)

SITE DESCRIPTION - Directions to the site are as follows: Take Garden State Parkway to 440 (East or North) and cross Outerbridge onto Staten Island. Follow Rt 440 to Page Avenue and turn right onto Hylan Boulevard. Continue and turn right onto Huguenot Avenue. Park at the end of the street, before the beach. Walk down to the beach. Blue mussels can be found on the rocks on the right side of the beach. Sediments were collected at this site in 1986 around the site center, which is an aid to navigation device, F 14 sec 8m "20".

SAMPLING METHOD - Intertidal hand collection.

SITE - New York Bight, Sandy Hook, NJ

SITE CODE - NYSH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 29.27' N **WATER DEPTH** - 7 meters
74° 02.70' W

LOCATED ON NOS CHARTS - 12327 (NAD 1983 partial, March 15, 1986)

SITE DESCRIPTION - Sampling in all years required numerous (>11) subtidal dredge tows across Flynns Knoll to collect sufficient numbers of mussels.

The most successful tows were from a southwest to northwest direction in waters deeper than 8 meters northeast of marker R N "4". During 1990 sampling, a concentration of larger mussels were found on the northern edge of the site.

NEW JERSEY SITES

Sediments are located in the waters (8 meters deep) adjacent to the Chapel Hill South Channel on both the east and west side.

SAMPLING METHOD - Dredge collection.

SITE - New York Bight, Long Branch, NJ

SITE CODE - NYLB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 17.68'N
73° 58.56'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 12324 (NAD 1927)

SITE DESCRIPTION - Intertidal mussels are found encrusted on stone jetties extending into the Bight. Bivalves are collected from the fifth jetty south of the Long Branch fishing pier on both the north and south side of the jetty.

Sediment at this site is sandy fill brought in to replace eroding substrate.

SAMPLING METHOD - Hand collection.

NEW JERSEY SITES

SITE - New York Bight, Shark River, NJ

SITE CODE - NYSR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 40° 11.18'N
74° 00.38'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 12324 (NAD 1927; November 15, 1986)

SITE DESCRIPTION - Intertidal bivalves are collected from the south entrance jetty to Shark River west of Fl G 4 sec 10 ft "1" on the south side of the jetty. The 1990 collection was by the south pier of the channel off the rocks closest to the water. The site center is located east of Fl G 4 sec 33 ft 4 m "2" off the south entrance to Shark River Inlet.

Sediment collections during 1986 were composed entirely of sand. It is thought that sediments at this site are sandy fill brought in to replace eroding substrate.

SAMPLING METHOD - Hand collection.

SITE - Barnegat Inlet, Barnegat Light, NJ

SITE CODE - BIBL

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 39° 45.52'N
74° 05.93'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 12324 (NAD 1927)

SITE DESCRIPTION - Intertidal mussel populations are located on the inshore end of the southern rock breakwater of Barnegat Light.

Sediments are low-deposition, high-energy, coarse-grained sand.

SAMPLING METHOD - Hand collection.

NEW JERSEY SITES

SITE - Absecon Inlet, Atlantic City, NJ

SITE CODE - AIAC

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 39° 22.15'N
74° 24.48'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHARTS - 12318 and 12316 (NAD 1927)

SITE DESCRIPTION - Intertidal bivalve populations are located on the west side of the Absecon Inlet on rock jetties adjacent to the Atlantic City boardwalk. Bivalve collections are from the northwest side of the rock jetty at the end of Pacific Avenue in Atlantic City, about halfway out on the wall.

SAMPLING METHOD - Hand collection.

SITE - Delaware Bay, Cape May, NJ

SITE CODE - DBCM

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 38° 58.92'N (Bivalve)
74° 57.92'W

38° 58.92'N (Sediment)
74° 58.13'W

LOCATED ON NOS CHART - 12304 (NAD 1927)

SITE DESCRIPTION - Intertidal mussels were located north of Cape May Canal on the stone jetties at Town Bank. In 1990 bivalves were collected from the third breakwall after the ferry breakwall. Mussels were collected at the end of the breakwall close to the waterline, in between the rocks.

To access the bivalve site follow the Garden State Parkway South to Route 9 towards the Cape May Ferry. Make a right turn onto Route 603 north to Town Bank.

SAMPLING METHOD - Hand collection.

NEW JERSEY SITES

SITE - Delaware Bay, False Egg Island Point, NJ

SITE CODE - DBFE

TARGET SPECIES: - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 39° 12.82'N (Bivalve) **WATER DEPTH** - 6 meters
75° 11.45'W

39° 12.71'N (Sediment)
75° 11.45'W

LOCATED ON NOS CHARTS - 12304 (NAD 1927)

SITE DESCRIPTION - Oysters are found on a transect 1.25 nautical miles northwest of False Egg Island Point heading towards Fortescue Channel. During 1986, one dredge tow was sufficient to collect all the bivalves required. However, subsequent sampling years have required numerous tows due to increased bivalve mortality.

The sediments are variable, ranging from sand, to peat, to mud. Oyster shells somewhat hampered sediment collection.

From Millville, NJ take Route 610 West to Route 629 and then to Route 637 to Newport. A boat can be launched at Money Island Marina. The bivalve site is located about 5 nautical miles southeast of Money Island.

The site is geographically located in an area used by Rutgers University for an oyster growth study.

SAMPLING METHOD - Dredge collection.

SITE - Delaware Bay, Ben Davis Point Shoal, NJ

SITE CODE - DBBD

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 39° 15.93'N (Bivalve) **WATER DEPTH** - 6 meters
75° 16.93'W

39° 16.41'N (Sediment)
75° 16.22'W

LOCATED ON NOS CHARTS - 12304 (NAD 1927)

SITE DESCRIPTION - This area contains subtidal commercial beds over sediments. The bivalve collection site is located south of Ben Davis Point.

NEW JERSEY SITES

The sediment site was relocated approximately 1 nautical mile northeast of the bivalve collection site to facilitate fine-grained sediment acquisition.

A boat may be launched in Newport, off of Route 637, at the Money Island Marina. From the marina travel into Nantuxent Cove, which is northeast of Ben Davis Point Shoal.

This site is geographically located in an area used by Rutgers University for an oyster growth study.

SAMPLING METHOD - Dredge collection.

SITE - Delaware Bay, Arnolds Point Shoal, NJ

SITE CODE - DBAP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATE - 39° 23.09'N
75° 25.88'W

WATER DEPTH - 7 meters

LOCATED ON NOS CHARTS - 12304 (NAD 1927)

SITE DESCRIPTION - Subtidal oyster beds exist north beyond the Cohansey River approximately 8 miles to Arnolds Point and Round Island. The site center is 45° southwest of Arnolds Point Tower and due south of the nuclear power plant.

Directions from Vineland: Travel Route 49 north to Bridgeton. At Bridgeton take Route 607 to Greenwich. Follow the signs for "Historic Greenwich." The Greenwich Boatworks is located there. The marina is on the Cohansey River approximately 4 nautical miles southeast of Arnolds Point.

This site is geographically located in an area used by Rutgers University for an oyster growth study.

SAMPLING METHOD - Dredge collection.

NEW JERSEY SITES

SITE - Delaware Bay, Hope Creek, NJ

SITE CODE - DBHC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 39° 25.60'N
75° 29.60'W

WATER DEPTH - 6 meters

LOCATED ON NOS CHART - 12311 (NAD 1927)

SITE DESCRIPTION - Adult bivalve populations exist at the mouth of Hope Creek and extend to Fishing Creek. The oysters in Hope creek are adversely affected during the spring run offs and do best when salinities are higher later in the season. A more stable bivalve population exists further down river at the bivalve site center, west of Adler Cove and Fishing Creek. Bearings for this area are 150 degrees from the Hope Creek Jetty (Fl 4 sec 16 ft 5 m) and 100 degrees from R "81" Fl R 4 sec.

A boat may be launched at the Woodland Beach launch ramp, at the end of Rte. 6 out of Smyrna, DE.

SAMPLING METHOD - Dredge collection.

NEW JERSEY SITES

Benthic Surveillance

SITE - Raritan Bay, Lower Bay, NJ

SITE CODE - RARLB

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1985-1987)

NOMINAL SITE CENTER - 40° 28.0'N
74° 05.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 6 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	RB1	40° 27.2'	74° 00.8'
1984	RB2	40° 29.5'	74° 10.2'
1984	RB3	40° 29.0'	74° 05.1'
1984	RB5	40° 35.6'	74° 01.1'
1985	RB1	40° 27.2'	74° 00.8'
1985	RB2	40° 29.5'	74° 10.2'
1985	RB3	40° 29.0'	74° 05.1'
1985	RB4	40° 32.1'	74° 02.9'
1985	RB5	40° 35.6'	74° 01.1'
1986	RB1	40° 27.2'	74° 00.8'
1986	RB2	40° 29.5'	74° 10.3'
1986	RB3	40° 29.0'	74° 05.1'
1986	RB4	40° 32.1'	74° 02.9'
1987	A	40° 27.4'	74° 01.0'
1987	B	40° 29.7'	74° 10.1'
1987	C	40° 29.2'	74° 05.1'

LOCATED ON NOS CHART - 12327 (NAD 1983 partial; March 15, 1986)

SITE DESCRIPTION - The center of activities for this site in the Raritan Bay is located south of the Raritan Bay East Reach and north of Belford Harbor, 1.08 nautical miles southwest of the R "6" Fl R 2.5 s BELL buoy on the north side of the ship channel, and 0.9 nautical miles northwest of the R N "2" buoy at the end of the large pier near Belford Harbor.

SITE - Raritan Bay, East Reach, NJ

SITE CODE - RARER

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1988-1990)

NOMINAL SITE CENTER - 40° 29.5'N
74° 05.4'W

**WATER DEPTH AT
NOMINAL CENTER** - 5 meters

NEW JERSEY SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	40° 29.4'	74° 04.8'
1988	B	40° 29.5'	74° 05.4'
1988	C	40° 29.7'	74° 06.4'
1989	A	40° 27.1'	74° 04.5'
1989	B	40° 29.3'	74° 05.5'
1989	C	40° 29.9'	74° 06.4'
1990	A	40° 29.7'	74° 06.2'
1990	B	40° 29.5'	74° 05.3'
1990	C	40° 29.5'	74° 04.3'

LOCATED ON NOS CHART - 12327 (NAD 1983 partial; March 15, 1986)

SITE DESCRIPTION - The center of activities was located south of the Raritan Bay West Reach channel by 0.3 nautical miles. It is also 0.8 nautical miles southeast of the R "26" FI R BELL buoy, which is located on the north side of the Raritan Bay West Reach channel.

SITE - Great Bay, Seven Island, NJ

SITE CODE - GRTSI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1985-1986)

NOMINAL SITE CENTER - 39° 31.0'N
74° 23.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 2 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	GB1	39° 31.7'	74° 21.7'
1985	GB2	39° 31.6'	74° 23.5'
1985	GB3	39° 30.7'	74° 23.7'
1985	GB4	39° 32.7'	74° 24.3'
1986	GB1	39° 31.7'	74° 21.7'
1986	GB2	39° 31.6'	74° 23.5'
1986	GB3	39° 30.7'	74° 23.7'

LOCATED ON NOS CHART - 12352 (NAD 1927; November 15, 1986)

NEW JERSEY SITES

SITE DESCRIPTION - The site center is located in the middle of Great Bay, west of Seven Island and east of Oyster Creek. It is located 1.1 nautical miles north of Fl R 15 ft "20" PA channel marker and 1.4 nautical miles northwest of the Fl R "2" marker at the mouth of Oyster Creek.

SITE - Great Bay, Wells Island, NJ

SITE CODE - GRTWI

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1987)

NOMINAL SITE CENTER - 39° 31.7'N
74° 23.6'W

**WATER DEPTH AT
NOMINAL CENTER** - 2 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	39° 31.7'	74° 20.7'
1987	B	39° 31.7'	74° 23.6'
1987	C	39° 30.7'	74° 23.7'

LOCATED ON NOS CHART - 12352 (NAD 1927; November 15, 1986)

SITE DESCRIPTION - The site center is located 1 nautical mile northwest of the previous year's site center. It is 0.6 nautical miles south of Graveling Point near Wells Island.

NEW JERSEY SITES

SITE - Great Bay Intracoastal Waterway, NJ

SITE CODE - GRTIW

TARGET SPECIES - *Pleuronectes americanus* (winter flounder) (1988-1989)

NOMINAL SITE CENTER - 39° 26.7'N
74° 23.5'W

WATER DEPTH AT
NOMINAL CENTER - 3 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	39° 26.6'	74° 23.9'
1988	B	38° 26.7'	74° 23.5'
1988	C	38° 27.2'	74° 23.6'
1990	A	39° 26.6'	74° 23.9'
1990	B	38° 26.7'	74° 23.5'
1990	C	38° 27.2'	74° 23.6'

LOCATED ON NOS CHART - 12316 (NAD 1983; October 20, 1990)

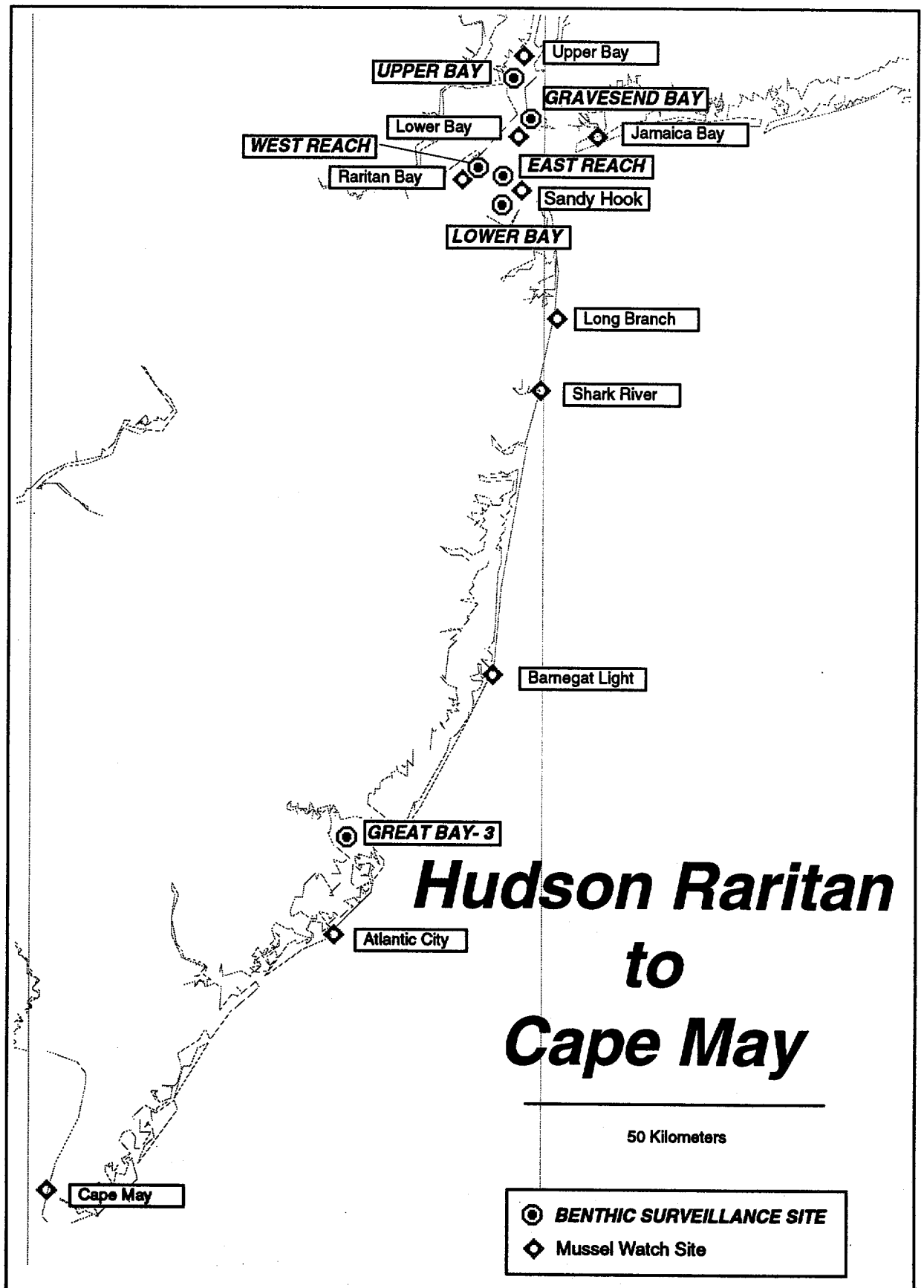
SITE DESCRIPTION - The site center is located in the channel of the Intracoastal Waterway, 0.1 nautical miles east of buoys C"45" and R"44A".

75°00'W

74°00'W

40°00'N

39°00'N



DELAWARE SITES

Mussel Watch

SITE - Delaware Bay, Woodland Beach, DE

SITE CODE - DBWB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 39° 19.92'N
75° 27.42'W

WATER DEPTH - 3 meters

LOCATED ON NOS CHART - 12304 (NAD 1927)

SITE DESCRIPTION - Woodland Beach is the northernmost range of *Crassostrea virginica* on the Delaware side of the Delaware Bay. Subtidal bivalves are located 0.5 nautical miles south of the boat ramp at Woodland Beach. These state-owned oyster beds are approximately 100-200 meters offshore in the area north of Bombay Hook Point. The area is listed as "oyster grounds" on the NOAA nautical chart.

Take Route 13 in Smyrna, DE to Route 6 and east to Woodland Beach. The Woodland Beach launch ramp and waterfowl check station is located at the end of Route 6.

SAMPLING METHOD - Dredge collection.

SITE - Delaware Bay, Kelly Island, DE

SITE CODE - DBKI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 39° 12.17'N
75° 21.30'W

WATER DEPTH - 5 meters

LOCATED ON NOS CHARTS - 12304 (NAD 1927, March 16, 1985)

SITE DESCRIPTION - Subtidal bivalves are collected from staked beds between channel markers C"3" and C"5," but closer to the southeast of the C"3" channel marker.

From Dover take Route 8 east to Little Creek. At Little Creek pick up Route 9 north and turn right onto Road #339. This dirt road follows the shoreline and marsh, and crosses oil transfer pipelines that lead to Port Mahon. The boat ramp at Port Mahon is run by the State of Delaware Recreation Department.

SAMPLING METHOD - Dredge collection.

DELAWARE SITES

SITE - Delaware Bay, Cape Henlopen, DE

SITE CODE - DBCH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 38° 47.28'N
75° 07.42'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 12304 (NAD 1927)

SITE DESCRIPTION - Mussel populations exist intertidally and subtidally in Cape Henlopen. In 1989 bivalves were collected on the west side of the jetty adjacent to the Cape Henlopen Ferry Terminal, midway between two towers (Fl R 4 sec 27 ft and E int R 2 sec 48 ft).

Use extreme caution when sampling this site in winter due to icing and high wave action. Better adult mussel populations are located very close to the low water line.

To reach the site from Dover, take Route 13 south to Route 113 south to Route 1 south, and finally to Route 9 south to Lewes/Cape Henlopen. Follow the Cape Henlopen Ferry signs through town, over a drawbridge (over the Lewes Canal) and onto Savannah Road. Follow the street to the end and make a right turn, following the signs to the ferry terminal.

SAMPLING METHOD - Hand collection.

DELAWARE SITES

Benthic Surveillance

SITE - Delaware Bay, Brandywine Shoal, DE

SITE CODE - DELBS

TARGET SPECIES - *Scophthalmus aquosus* (windowpane flounder) (1984-1986)

NOMINAL SITE CENTER - 39° 00.0'N
75° 10.0'W

WATER DEPTH AT
NOMINAL CENTER - 10 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	DB1	39° 03.9'	75° 13.3'
1984	DB11	38° 50.9'	75° 04.5'
1984	DB9	38° 57.6'	75° 04.5'
1985	DB1	39° 03.9'	75° 13.3'
1985	DB15	38° 52.8'	75° 10.3'
1985	DB16	38° 55.1'	75° 02.0'
1985	DB2	39° 19.6'	75° 23.0'
1986	DB1	39° 03.9'	75° 13.3'
1986	DB15	38° 52.8'	75° 10.3'
1986	DB16	38° 55.1'	75° 02.0'

LOCATED ON NOS CHART - 12304 (NAD 1927; March 16, 1985)

SITE DESCRIPTION - The center of this site is located northwest of Brandywine Shoal and southeast of The Lower Middle. It can be located 1.2 nautical miles west of the R "14" Fl R 2.5 sec channel marker on the east side of the Brandywine Range, 1.31 nautical miles northeast of the W "F" Fl 6 sec buoy near Old Bare Shoal, and 2.18 nautical miles southwest of the R "16" Fl 4 sec BELL buoy on the east side of the Brandywine Range.

SITE - Delaware Bay, The Shears, DE

SITE CODE - DELTS

TARGET SPECIES - *Scophthalmus aquosus* (windowpane flounder) (1987)

NOMINAL SITE CENTER - 38° 52.8'N
75° 10.4'W

WATER DEPTH AT
NOMINAL CENTER - 8 meters

DELAWARE SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	39° 03.9'	75° 13.3'
1987	B	38° 52.8'	75° 10.4'
1987	C	38° 55.1'	75° 02.0'

LOCATED ON NOS CHART - 12304 (NAD 1927, March 16, 1985)

SITE DESCRIPTION - The site 1.9 nautical miles west of the R "28" Fl R 2.5 sec marker on the southeastern corner of the Anchorage area, and 3.4 nautical miles east of Primehook Beach northwest of an area known as The Shears.

SITE - Delaware Bay, Cherry Island Range, DE

SITE CODE - DELCI

TARGET SPECIES - *Roccus americanus* (white perch) (1990)

NOMINAL SITE CENTER - 39° 42.6'N
75° 30.0'W

WATER DEPTH AT
NOMINAL CENTER - 10 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	A	39° 43.1'	75° 29.8'
1990	B	38° 42.6'	75° 30.1'
1990	C	38° 42.3'	75° 30.4'

LOCATED ON NOS CHART - 12311 (NAD 1983; September 21, 1991)

SITE DESCRIPTION - The site center is located east of the Cherry Island Range. It is 0.5 nautical miles south of buoy G C"1", and 0.6 nautical miles east southeast of Fl G 2.5 sec light 36 ft HORN 7 "1" at the mouth of Christina River.

76°42'W

75°24'W

- ⊙ **BENTHIC SURVEILLANCE SITE**
◆ **Mussel Watch Site**

BALTIMORE HARBOR- 2

Bodkin Point

GIBSON ISLAND

Mountain Point Bar

CHESTER RIVER

Hackett Point Bar

KENT ISLAND

Kelly Island

Hope Creek

Arnolds Point Shoal

Ben Davis Point Shoal

False Egg Island

⊙ **DELAWARE BAY- 3**

Cape Henlopen

Choptank River

Hog Point

Swan Point

Mattox Creek

Ragged Point

SMITH ISLAND

Ross Rock

Ingram Bay

Chincoteague Inlet

Upshur Bay

Cape Charles

Dandy Point

⊙ **YORK RIVER**

James River

ELIZABETH RIVER

Delaware and Chesapeake Bay

50 Kilometers

39°00'N

37°30'N

MARYLAND SITES

Mussel Watch

SITE - Chesapeake Bay, Bodkin Point, MD

SITE CODE - CBBO

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 39° 09.60'N
76° 24.07'W

WATER DEPTH - 5 meters

LOCATED ON NOS CHART - 12273 (NAD 1927)

SITE DESCRIPTION - The bivalve site is located at a section known as Sevenfoot Knoll, near Sevenfoot Knoll Light (Fl R 6 sec 42 ft 7 m). This site is located at the intersection of the Craighill Channel Upper Range and the Brewerton Channel Eastern Extension. Oyster beds are located in the southern section near the lighthouse. Small craft operators are advised to use extreme caution in this area, as waves of up to 12 feet have been reported to be generated by larger vessels transiting the area.

A boat can be launched from Sandy Point State Park (Fairwinds Marina) located off Route 50/301 (Blue Star Highway) next to the William P. Lane Jr. Memorial Bridges (Chesapeake Bay Bridge). The marina entrance runs parallel to the Bay Bridge.

SAMPLING METHOD - Dredge collection.

SITE - Chesapeake Bay, Mountain Point Bar, MD

SITE CODE - CBMP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 39° 04.42'N
76° 24.73'W

WATER DEPTH - 3 meters

LOCATED ON NOS CHARTS - 12273 (NAD 1927)

SITE DESCRIPTION - The boat launch is at Sandy Point State Park (Fairwinds Marina) located off of Route 50/301 (Blue Star Highway) next to the Chesapeake Bay Bridge.

The entrance to the marina runs parallel to the Bay Bridge. The site is along a heading towards the Baltimore Light (Fl 2.5 sec 52 ft 5 m). This site, immediately east of Gibson Island, is located after the Craigville Entrance to Baltimore Harbor and approximately 1.5 nautical miles (bearing 330 degrees) from navigation aid G "5C" QG. Bivalve collections are approximately 1,000 meters off of the Windmill Point flagpole at a 98-degree bearing.

SAMPLING METHOD - Dredge collection.

MARYLAND SITES

SITE - Chesapeake Bay, Hackett Point Bar, MD

SITE CODE - CBHP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 38° 58.37'N
76° 25.00'W

WATER DEPTH - 7 meters

LOCATED ON NOS CHARTS - 12286 (NAD 1927; January 23, 1984)

SITE DESCRIPTION - The site is located near the narrow point of the Chesapeake Bay, just south of the Chesapeake Bay Bridge, and east of Annapolis. Subtidal bivalves are located north and west of marker BK C"1".

SAMPLING METHOD - Dredge collection.

SITE - Chesapeake Bay, Choptank River, MD

SITE CODE - CBCP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 38° 36.41'N
76° 07.20'W

WATER DEPTH - 5 meters

LOCATED ON NOS CHARTS - 12260 and 12220 (NAD 1927)

SITE DESCRIPTION - Subtidal oyster beds exist throughout the Choptank River. It is recommended that a boat be launched from the dock at Horn Point Laboratory (University of Maryland), and that bivalves be collected at Howells Point or Sandy Hill. The site is located approximately 0.5 nautical miles southwest of Howell Point., between G"19" 11 fLG2,5s and "19A" PA. Oysters are taken to the north of the channel in approximately 3-5 meters of water. Sediment are just to the south in 15-20 meters of water.

Follow Route 50 to Cambridge, MD to route 343 (Washington Street); this road leads through town and into the country. At Longs Country Store there is a "v" in the road, bear to the right. The Horn Point campus entrance is about a mile and a half down this road.

SAMPLING METHOD - Dredge collection.

MARYLAND SITES

SITE - Chesapeake Bay, Hog Point, MD

SITE CODE - CBHG

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 38° 18.74'N
76° 23.87'W

WATER DEPTH - 5 meters

LOCATED ON NOS CHARTS - 12230 (NAD 1927)

SITE DESCRIPTION - The site center is about halfway between Hog Point a navigation aid Fl G 2.5 sec 4 m "3".

Travel south on Route 2 and then follow Route 4 to Solomons Island, MD and the Patuxent River Bridge. Public boat ramps are at the base of the bridge.

SAMPLING METHOD - Dredge collection.

SITE - Potomac River, Swan Point, MD

SITE CODE - PRSP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 38° 16.90'N
76° 56.02'W

WATER DEPTH - 4 meters

LOCATED ON NOS CHART - 12286 (NAD 1927)

SITE DESCRIPTION - Subtidal oysters are collected approximately 0.5 miles southwest of Swan Point. Oysters are collected on the northeast side of the site in 3-6 meters of water. Sediments are in deeper water. The sampling boat may be launched from Cobb Island Marina.

SAMPLING METHOD - Dredge collection.

MARYLAND SITES

Benthic Surveillance

SITE - Baltimore Harbor, Fort McHenry Channel, MD

SITE CODE - BALFM

TARGET SPECIES - Fish were not sampled at this site.

NOMINAL SITE CENTER - 39° 14.7'N
76° 33.8'W

WATER DEPTH AT
NOMINAL CENTER - 6 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	BAH1	39° 13.6'	76° 33.0'
1986	BAH2	39° 14.7'	76° 33.8'
1986	BAH3	39° 15.5'	76° 34.7'

LOCATED ON NOS CHART - 12278 (NAD 1927, August 17, 1985)

SITE DESCRIPTION - The site center is located west of the Fort McHenry Channel, northeast of Fairfield, and west of Dundalk Marine Terminal. The center can be found 0.2 nautical miles southwest of the Fl G 4 sec "15 M" channel marker on the west side of the Fort McHenry Channel, and 0.3 nautical miles northwest of the C "13M" buoy.

SITE - Baltimore Harbor, Brewerton Channel, MD

SITE CODE - BALBC

TARGET SPECIES - *Roccus americanus* (white perch) (1989, 1990)

NOMINAL SITE CENTER - 39° 12.5'N
76° 31.4'W

WATER DEPTH AT
NOMINAL CENTER - 6 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	39° 11.3'	76° 27.7'
1989	B	39° 11.6'	76° 28.4'
1989	C	39° 11.8'	76° 28.8'
1990	A	39° 12.7'	76° 31.6'
1990	B	39° 12.5'	76° 31.4'
1990	C	39° 11.9'	76° 31.2'

MARYLAND SITES

LOCATED ON NOS CHART - 12278 (NAD 1927; August 17, 1985)

SITE DESCRIPTION - This site is located in Fort McHenry Channel near the Marine Channel entrance and northwest of the Brewerton angle. It is located 0.6 nautical mile east-southeast of Hawkins Point, and 0.5 nautical miles southwest of the G C"3" marker by .

SITE - Chesapeake Bay, Chester River, MD

SITE CODE - CHBCR

TARGET SPECIES - *Roccus americanus* (white perch) (1989, 1990)

NOMINAL SITE CENTER - 39° 01.6'N
76° 11.9'W

**WATER DEPTH AT
NOMINAL CENTER** - 15 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	38° 02.1'	76° 12.1'
1989	B	39° 01.5'	76° 11.6'
1989	C	39° 01.0'	76° 11.3'
1990	A	38° 02.6'	76° 12.3'
1990	B	39° 01.6'	76° 11.8'
1990	C	39° 01.3'	76° 11.6'

LOCATED ON NOS CHART - 12272 (NAD 1927; April 24, 1984)

SITE DESCRIPTION - The site center is located east of Eastern Neck Island. It is 0.5 nautical miles east of the mouth of Shipyard Creek, 1.2 nautical miles southwest of Piney Point on Tilghman Neck, and 1.1 nautical miles north-northwest of the Fl R 4 sec buoy R "12".

MARYLAND SITES

SITE - Chesapeake Bay, Gibson Island, MD

SITE CODE - CHBGI

TARGET SPECIES - *Leiostomus xanthurus* (spot) (1985, 1986)

NOMINAL SITE CENTER - 39° 05.0'N
76° 20.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 9 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	CU11	38° 51.6'	76° 26.0'
1985	CU22	38° 55.7'	76° 25.0'
1985	CU33	39° 01.4'	76° 22.4'
1985	CU44	39° 06.1'	76° 20.0'
1985	CU55	39° 12.2'	76° 16.6'
1986	CU22	38° 55.7'	76° 25.0'
1986	CU33	39° 01.4'	76° 22.4'
1986	CU44	39° 06.1'	76° 20.0'
1986	CU55	39° 12.2'	76° 16.6'

LOCATED ON NOS CHARTS - 12273 (April 14, 1984) and 12278 (August 17, 1985) (both NAD 1927)

SITE DESCRIPTION - The site center is located east of Gibson Island and Craighill Channel, north of Kent Island, and west of Eastern Neck. The center is 1.1 nautical miles west of the Fl G 4sec buoy on the west side of Swan Point Channel, 2.8 nautical miles southeast of the R "8C" Fl R 4 sec channel marker on the east side of the Craighill Channel, 4.5 nautical miles south of the Fl G 4 sec G "3" channel marker on the south side of the Brewton Channel Eastern Extension, and 3.4 nautical miles northeast of the R "2C" Fl R 4 sec BELL buoy marking the entrance to Craighill Channel.

SITE - Chesapeake Bay, Kent Island, MD

SITE CODE - CHBKI

TARGET SPECIES - *Leiostomus xanthurus* (spot) (1987)

NOMINAL SITE CENTER - 39° 01.4'N
76° 22.1'W

**WATER DEPTH AT
NOMINAL CENTER** - 9 meters

MARYLAND SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	38° 55.8'	76° 25.0'
1987	B	39° 01.4'	76° 22.1'
1987	C	39° 05.8'	76° 20.0'

LOCATED ON NOS CHART - 12273 (NAD 1927; April 14, 1984)

SITE DESCRIPTION - The site center is 2.3 nautical miles west of Kent Island, 1.4 nautical miles east of Sandy Point, 1.2 nautical miles southwest of the BW "LP" Mo(A) marker, and 1.1 nautical miles southeast of the R"2C" Fl R 4sec BELL buoy.

SITE - Chesapeake Bay, Smith Island, MD

SITE CODE - CHBSI

TARGET SPECIES - Fish were not sampled at this site.

NOMINAL SITE CENTER - 37° 55.0'N
76° 10.0'W

WATER DEPTH AT
NOMINAL CENTER - 26 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	CM1	37° 47.3'	76° 10.7'
1985	CM2	37° 52.2'	76° 07.8'
1985	CM3	37° 58.5'	76° 11.1'
1985	CM4	38° 05.1'	76° 13.1'
1986	CM1	37° 47.3'	76° 10.7'
1986	CM2	37° 52.2'	76° 07.8'
1986	CM3	37° 58.5'	76° 11.1'
1986	CM4	38° 05.1'	76° 13.1'

LOCATED ON NOS CHART - 12230 (NAD 1927; May 31, 1986)

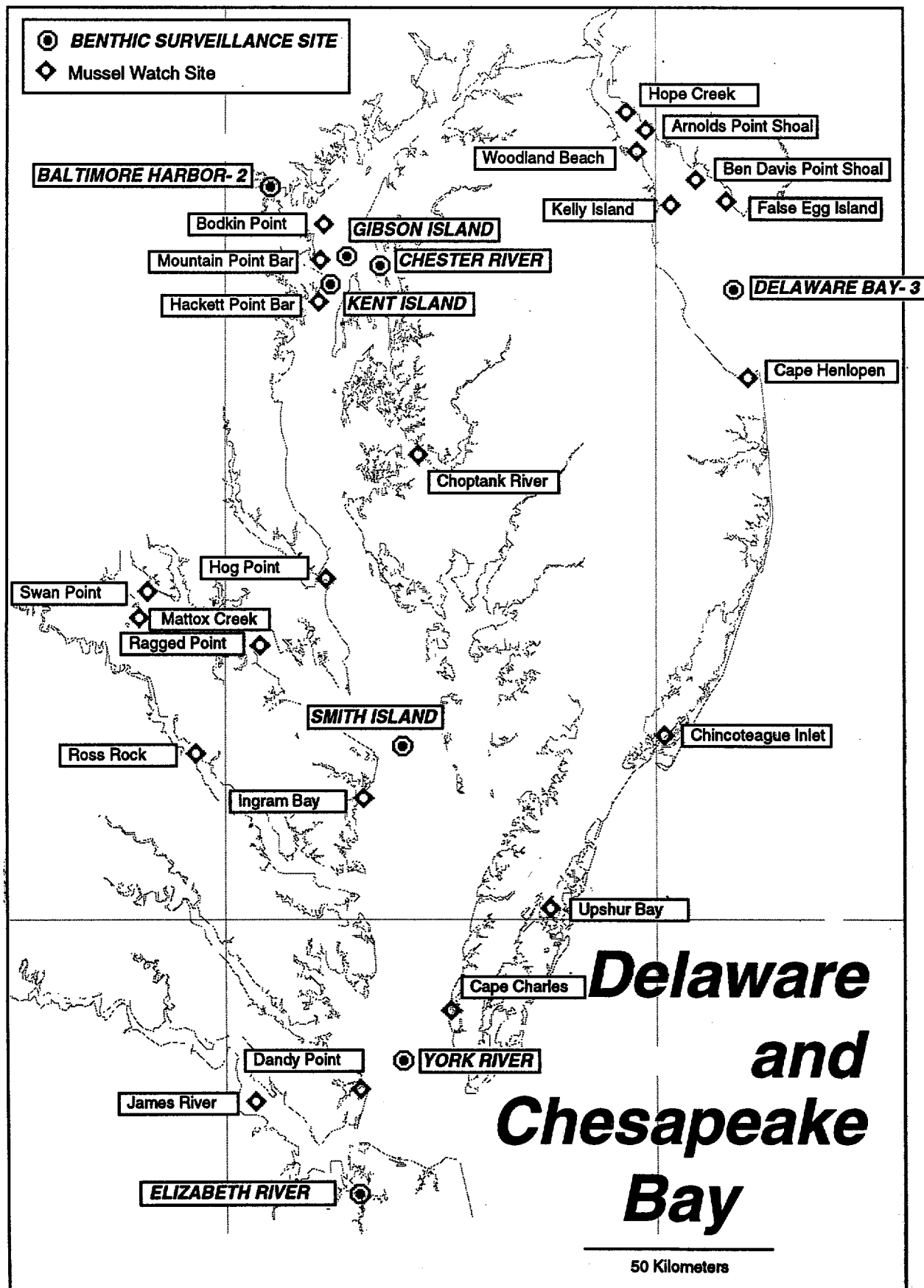
SITE DESCRIPTION - The site center is located just north of the Maryland State line in the middle of the Chesapeake Bay, northeast of Smith Point at the mouth of the Potomac River and southwest of Smith Island. It is 3.5 nautical miles southwest of the Fl R 2.5 sec 15 ft 4 "2" PA near Smith Point, and 2.3 nautical miles north of the W Or "SP" Gp Fl (4) 12 sec BELL buoy.

76°42'W

75°24'W

9°00'N

7°30'N



VIRGINIA SITES

Mussel Watch

SITE - Chincoteague Bay, Chincoteague Inlet, VA

SITE CODE - CBCI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 37° 56.51'N
75° 22.60'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 12211 (NAD 1927)

SITE DESCRIPTION - Access to these beds is at low tide via a small boat or by foot through the marshlands located at the base of the Chincoteague Channel drawbridge. The intertidal collection site is located directly across from the Landmark (Crab House) Restaurant, at the northeast point of the mud flat.

Sediment collection is restricted by the channel's proximity and the limited depth within the bivalve collection area.

SAMPLING METHOD - Hand collection.

SITE - Quinby Inlet, Upshur Bay, VA

SITE CODE - QIUB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 37° 31.85'N
75° 43.38'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHARTS - 12210 (NAD 1927)

SITE DESCRIPTION - The site is located 0.5 miles outside of Quinby Creek and can be reached by taking Highway 13 toward Wachapreague to Route 605 toward Quinby to Route 606 to get to the Quinby Harbor. Oysters are collected from mud flats in Upshur Bay. Beds are accessible only by a small boat. Collections are intertidal by hand. Waders are suggested.

Sediments consisted of mud taken adjacent to the flats at the bivalve collection site.

SAMPLING METHOD - Hand collection.

VIRGINIA SITES

SITE - Chesapeake Bay, Cape Charles, VA

SITE CODE - CBCC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 37° 17.09'N
76° 01.19'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 12224 (NAD 1927)

SITE DESCRIPTION - This former U.S. Environmental Protection Agency mussel watch site is located in a tidal marshland off the beach of the KOA Cherrystone Campground. It is necessary to request permission from the campground manager in order to sample or use the dock. Bivalves are intertidal and are collected by hand. Access is near the mouth of Mill Creek.

In sampling years 6 and 7 access was denied at the campground (new owners); therefore permission for access was requested and received to the Cherrystone Aquafarms. This facility is immediately adjacent to the former campground site.

SAMPLING METHOD - Hand collection.

SITE - Potomac River, Mattox Creek, VA

SITE CODE - PRMC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 38° 13.12'N
76° 57.32'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 12286 (NAD 1927)

SITE DESCRIPTION - The site center is south of the Sebastian Point entrance at R "2" PA and Fl 4 sec 14 ft 5 m "1", approximately 0.5 miles south of Gum Bar Point in Colonial Beach, Virginia. This site is subtidal.

Travel Route 301 south to Edgehill and take Route 205 east to Maple Grove, then Route 208 east to Potomac Beach to Colonial Beach. Follow Colonial Avenue to the Days Inn and make a right turn. Follow the shoreline road 1 mile toward Gum Bar Point, to the public boat ramp.

SAMPLING METHOD - Dredge collection.

VIRGINIA SITES

SITE - Potomac River, Ragged Point, VA

SITE CODE - PRRP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 38° 09.37'N
76° 35.87'W

WATER DEPTH - 4 meters

LOCATED ON NOS CHART - 12286 (NAD 1927; June 02, 1984)

SITE DESCRIPTION - From Rappahannock cross the Rappahannock River Bridge to Route 360 east, turn onto Route 3 north for 3 miles, turn onto Route 203, to Route 202, and finally to Route 612 north to Coles Neck Point. At the point take Route 728 to the boat launch ramp at Ragged Point Marina/Campground.

From the Ragged Point Marina entrance R"2", take a bearing of 40 degrees to BW N "51B". The bivalve site center is located about 0.75 nautical mile northeast of Ragged Point, near navigation aids BW N "51B" and Fl 6 sec 44 ft 9 m.

SAMPLING METHOD - Dredge collection.

SITE - Chesapeake Bay, Ingram Bay, VA

SITE CODE - CBIB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 37° 47.63'N
76° 17.06'W

WATER DEPTH - 5 meters

LOCATED ON NOS CHARTS - 12220 (NAD 1927)

SITE DESCRIPTION - The site center is slightly west of the Great Wicomico River Light near the R "N4" navigation aid (just about in the center of Ingram Bay). The site is located 1,000 yards northeast of Dameron Marsh within Ingram Bay.

From Rappahannock travel Route 17 to Route 360 toward the coast. At Reedville take Route 657 to Fleeton; the ramp is located in Fleeton on Route 692 and launches into Ingram Bay.

SAMPLING METHOD - Dredge collection.

VIRGINIA SITES

SITE - Rappahannock River, Ross Rock, VA

SITE CODE - RRRR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 37° 54.08'N
76° 47.43'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 12237 (NAD 1927)

SITE DESCRIPTION - Oysters are collected on the shoal near Ross Rock northeast of Lowry Point on Ross Rock Shoal. The subtidal site is approximately 34 miles from the mouth of the river and approximately 3.5 miles southeast of the Route 360 bridge in Tappahannock. The boat can be launched at a town boat ramp off Dock Street.

SAMPLING METHOD - Dredge collection.

SITE - Chesapeake Bay, Dandy Point, VA

SITE CODE - CBDP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 37° 06.04'N (1987-'90) 76° 17.73'W

37° 06.10'N (1986)
76° 19.41'W

LOCATED ON NOS CHARTS - 12238 (NAD 1927)

SITE DESCRIPTION - In 1986 oysters were collected 500 meters to the northwest of Stoney Point (the site acronym was CBST). The absence of bivalves during 1987 sampling required a site relocation to Dandy Point in the Back River. This site is intertidal and the bivalves were collected from the western bank of the island containing the cabin and the dock. The oysters were 1-2 years old and located along the shoreline in the marsh grass.

Sediments are brown to gray anoxic mud and are located adjacent to the channel.

SAMPLING METHOD - Hand collection.

VIRGINIA SITES

SITE - Chesapeake Bay, James River, VA

SITE CODE - CBJR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 37° 04.07'N
76° 36.68'W

WATER DEPTH - 3 meters

LOCATED ON NOS CHART - 12248 (NAD 1927)

SITE DESCRIPTION - Oyster beds in the James River are located subtidally at the Point of Shoals, just northwest of Days Point. The site center is near Rocklanding Shoal Channel about 800 yards southwest of Fl G 4 sec 15 ft "15". Oysters are also found at depths of 1-2 meters on Horsehead Rock.

To get to the site, take Route 17 south to Mercury Boulevard (Route 17) in Newport News. Across the James River Bridge (Route 17/258) to Route 32 west for 3 miles to Route 10 north (business). Follow the signs to the public boat ramp at Tylers Beach.

SAMPLING METHOD - Subtidal dredge collection.

VIRGINIA SITES

Benthic Surveillance

SITE - Chesapeake Bay, York River, VA

SITE CODE - CHBYR

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1984, 1986)
Leiostomus xanthurus (spot) (1985-1986)

NOMINAL SITE CENTER - 37° 10.0'N
 76° 10.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 8 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	CL1	37° 09.1'	76° 10.6'
1984	CL2	37° 14.3'	76° 04.2'
1984	CL3	37° 19.0'	76° 11.1'
1985	CL1	37° 09.1'	76° 10.6'
1985	CL2	37° 14.3'	76° 04.2'
1985	CL3	37° 19.0'	76° 11.1'
1986	CL1	37° 09.1'	76° 10.6'
1986	CL2	37° 14.3'	76° 04.2'
1986	CL3	37° 19.0'	76° 11.1'

LOCATED ON NOS CHART - 12221 (NAD 1927; December 14, 1985)

SITE DESCRIPTION - This site center is located west of the York Spit Channel and northeast of the York River Entrance Channel. It is located 0.6 nautical miles northwest of channel marker "19" Fl G 4sec on the west side of York Spit Channel, 1.7 nautical miles northeast of channel marker Fl R 4 sec R "6" on the east side of the York River Entrance Channel, and 3.0 nautical miles southeast of buoy BW N "C39".

SITE - Chesapeake Bay, Elizabeth River, VA

SITE CODE - CHBER

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1986)

NOMINAL SITE CENTER - 36° 50.8'N
 76° 18.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 6 meters

VIRGINIA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	ER1	36° 52.8'	76° 20.3'
1986	ER2	36° 50.33'	76° 15.1'
1986	ER3	36° 48.6'	76° 17.35'

LOCATED ON NOS CHART - 12253 (NAD 1927; December 13, 1986)

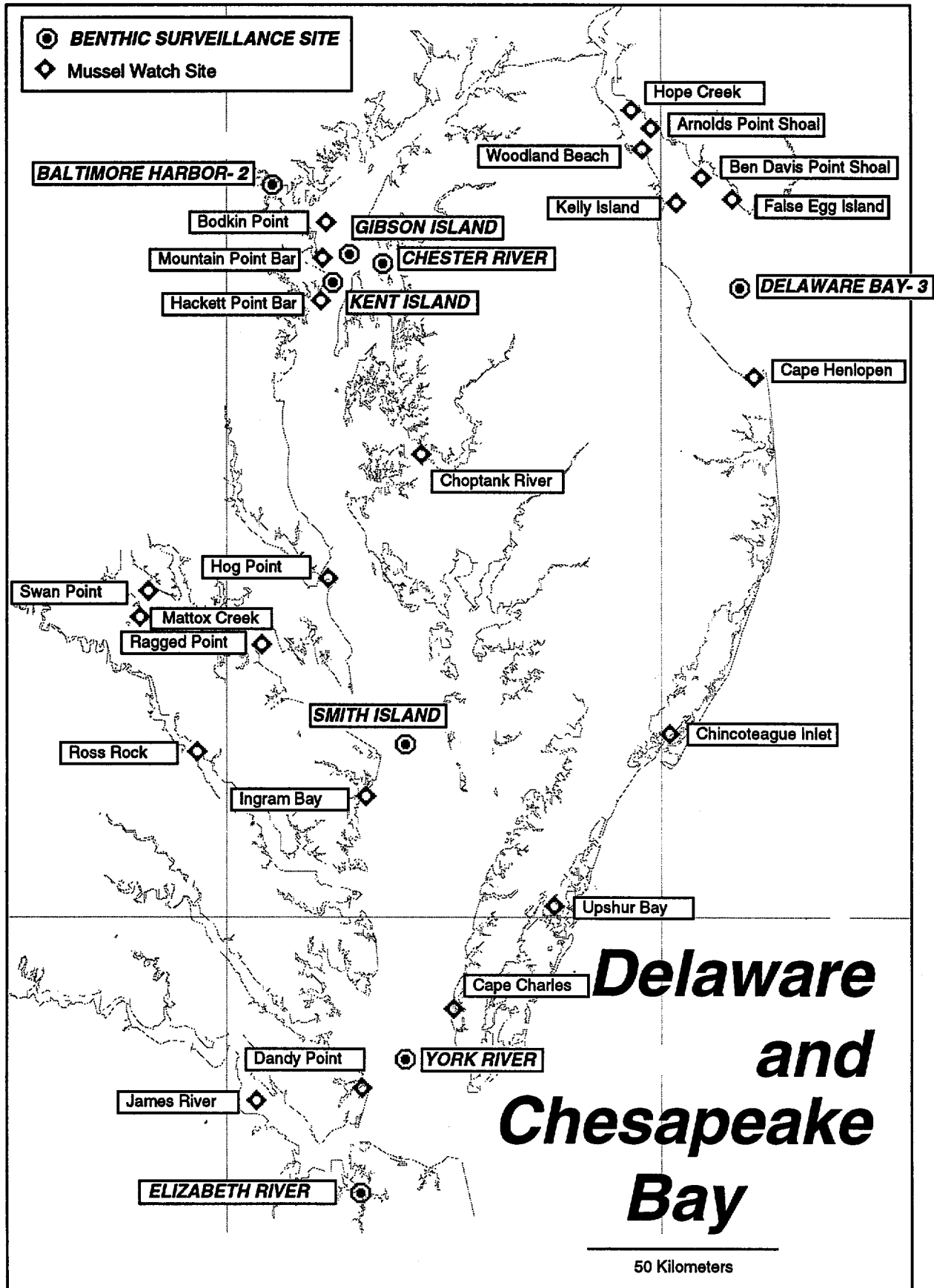
SITE DESCRIPTION - The center of activities for the Elizabeth River is located in Port Norfolk Reach, northwest of Town Point and southeast of Atlantic City, just south of the R "36"13 Qk Fl R buoy on the west side of Port Norfolk Reach. Specific sampling sites were in the main stem, Southern Branch, and Eastern Branch of the Elizabeth River.

76°42'W

75°24'W

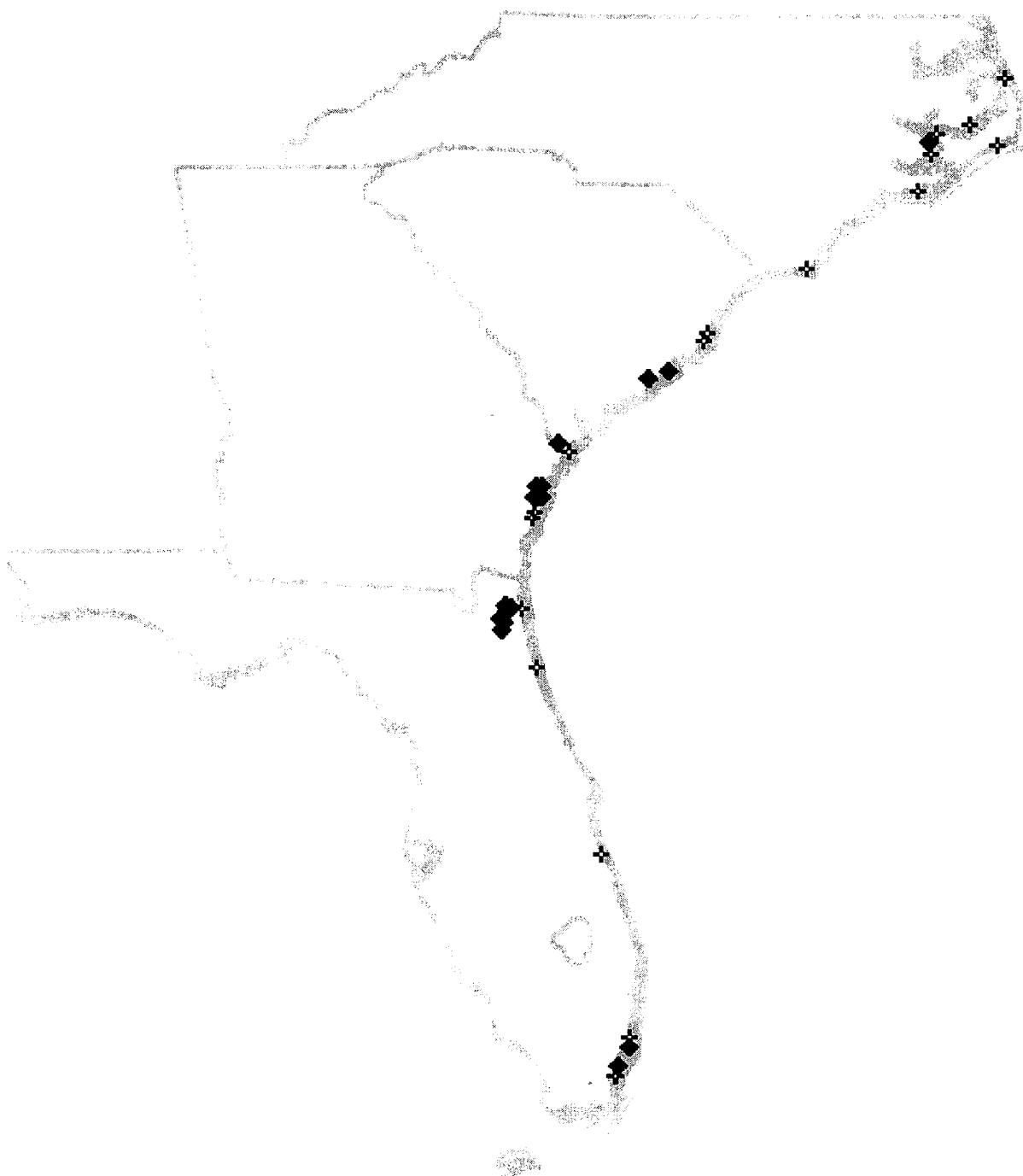
39°00'N

37°30'N



NATIONAL STATUS & TRENDS PROGRAM

South Atlantic Region



✚ Mussel Watch Project
◆ Benthic Surveillance Project

NORTH CAROLINA SITES

Mussel Watch

SITE - Roanoke Sound, John Creek, NC

SITE CODE - RSJC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 35° 53.47'N
75° 37.98'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 12204 (NAD 1927)

SITE DESCRIPTION - This site is located south of the Roanoke Sound Bridge near John Creek. Bivalves are on the west side of the channel approximately 20 meters offshore. Tows are made north/south along the shoreline in front of the dredge spoils at the entrance to John Creek. Sediments sampled at this site were coarse-grained sand mixed with finer grained mud.

SAMPLING METHOD - Subtidal dredge collection.

SITE - Pamlico Sound, Wysocking Bay, NC

SITE CODE - PSWB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 35° 24.67'N
76° 03.45'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 11555 (NAD 1927; October 19, 1985)

SITE DESCRIPTION - This site is located within Wysocking Bay, 1.4 kilometers southeast of Mackay Point. Dredging was most productive in an area approximately 50-100 meters north-northeast of Fl R 4 sec 15 ft 4 M "6". Tows commencing north-northeast of R"6" and continuing for 10-35 meters at a course of 110-140 degrees produced the greatest oyster yield.

Sediments at this site were a sandy mud.

From Nags Head take Route 64/264 through Roanoke over the bridge on Route 264 west to Engelhard. Continue on Route 264 west about 5 miles to Lake Landing. Make a left turn at Lake Landing and go about 4 miles on Gull Rock Road to Gull Rock. A launch ramp is located across from Gibbs General Store, on a tight right turn in the road.

SAMPLING METHOD - Subtidal dredge collection.

NORTH CAROLINA SITES

SITE - Pamlico Sound, Pungo River, NC

SITE CODE - PSPR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 35° 19.48'N
76° 26.95'W

WATER DEPTH - 4 meters

LOCATED ON NOS CHART - 11548 (NAD 1927)

SITE DESCRIPTION - This subtidal site is located at the mouth of the Pamlico River approximately 0.75 miles northeast of the Pamlico Point Light ("PP" Fl 4 sec 40 ft 8m). The site is also northeast of Goose Creek Island off of Pamlico Point.

From New Bern, take Route 55 east through Alliance, and pick up Route 304 (east) all the way to Hobacken (Goose Creek Island). Make a left turn at Hobacken to go to the Lowlands. Follow this road to Street #1234 Horne Road (on the right), follow this street to Street #1235 Oyster Creek Road (on the right). A boat ramp is found at the end of this road.

SAMPLING METHOD - Dredge collection.

SITE - Pamlico Sound, Neuse River, NC

SITE CODE - PSNR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 35° 05.42'N
76° 31.65'W

WATER DEPTH - 5.5 meters

LOCATED ON NOS CHART - 11553 (NAD 1927, June 7, 1986)

SITE DESCRIPTION - In year 4 oysters were collected by dredging southeast of Swan Island and East of Piney Point. In year 5 the site was moved to a point approximately 0.75 miles east of Fl R 4 sec 15ft 4m "4". Oysters are located on a series of small shoals on the west side of the site.

SAMPLING METHOD - Subtidal dredge collection.

NORTH CAROLINA SITES

SITE - Pamlico Sound, Cape Hatteras, NC

SITE CODE - PSCH

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 35° 12.68'N (Bivalve) **WATER DEPTH** - 0.3 meter
75° 43.24'W

35° 12.37'N (Sediment)
75° 42.96'W

LOCATED ON NOS CHART - 11555 (NAD 1927)

SITE DESCRIPTION - To locate bivalve beds follow Route 125 to Hatteras. When the road splits, stay to the left following Sand Road towards the beach. Take the first right and park. Walk 200-300 meters along the water. Oysters can be found in the shallow water. Only sandy sediments were found at this site.

SAMPLING METHOD - Intertidal hand collection.

SITE - Beaufort Inlet, Pivers Island, NC

SITE CODE - BIP1

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 34° 43.10'N **WATER DEPTH** - 0.2 meter
76° 40.53'W

LOCATED ON NOS CHART - 11545 (NAD 1927)

SITE DESCRIPTION - Follow Route 70 east from Beaufort to the NOAA Labs sign. Bivalves are located to the right of the bridge which connects to Pivers Island. These oyster beds are located approximately 50 meters from the site center and on the western shore of Pivers Island. The acceptable collection range includes bivalves from the western shore of Pivers Island to sections of the eastern shore of Radio Island.

Sediments can be collected directly under the bridge about 200 meters from the NOAA laboratories.

SAMPLING METHOD - Intertidal hand collection.

NORTH CAROLINA SITES

SITE - Cape Fear, Battery Island, NC

SITE CODE - CFBI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 33° 54.92'N
78° 00.50'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 11534 (NAD 1927)

SITE DESCRIPTION - This site, along the Intracoastal Waterway, is located on the north-northwest side of Battery Island, southeast of Southport. Three distinct beds exist side by side with dense populations of oysters. A small boat can be used to access oysters at the north end of Battery Island. The oyster collection occurred on a mud flat.

Acceptable sediment is found 230-232 degrees from Oak Island Light and 330-336 degrees from the Southport water tank.

SAMPLING METHOD - Intertidal hand collection.

NORTH CAROLINA SITES

Benthic Surveillance

SITE - Pamlico Sound, Jones Bay, NC

SITE CODE - PAMJB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 35° 13.5'N
76° 32.1'W

**WATER DEPTH AT
NOMINAL CENTER** - 3 meters

CENTER OF FISHING ACTIVITIES:

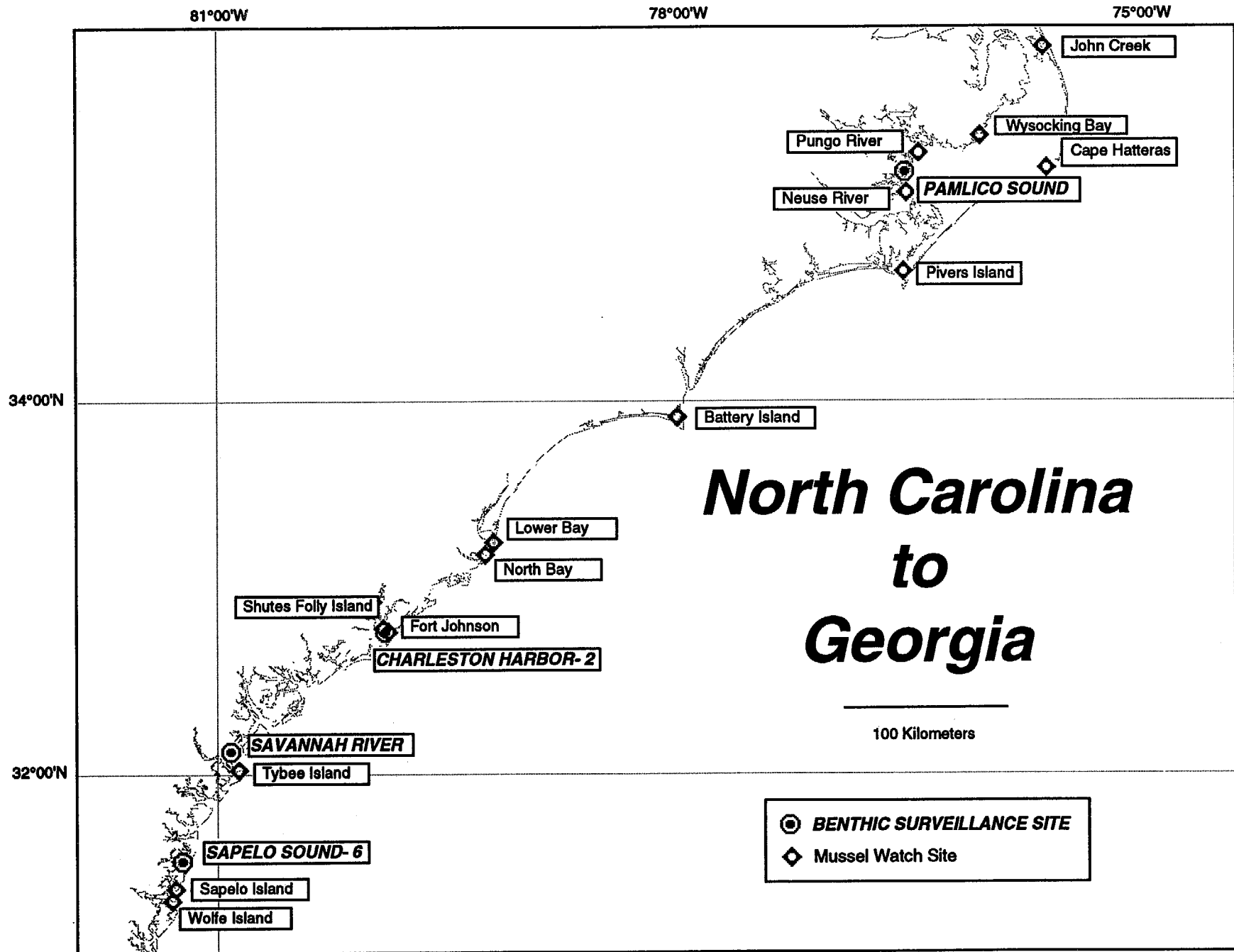
SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	35° 12.8'	76° 31.5'
1985	35° 13.1'	76° 31.8'
1986	35° 12.5'	76° 30.6'
1988	35° 13.0'	76° 31.0'
1990	35° 14.1'	76° 34.2'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	35° 13.9'	76° 33.6'
1984	2	35° 13.0'	76° 30.8'
1984	3	35° 13.5'	76° 32.1'
1985	1	35° 13.9'	76° 33.6'
1985	2	35° 13.0'	76° 30.8'
1985	3	35° 13.5'	76° 32.1'
1986	1	35° 13.9'	76° 33.6'
1986	2	35° 13.0'	76° 31.5'
1986	3	35° 12.7'	76° 30.8'
1988	1	35° 13.9'	76° 33.8'
1988	2	35° 13.2'	76° 31.9'
1988	3	35° 12.8'	76° 31.3'
1990	1	35° 14.0'	76° 34.0'
1990	2	35° 13.5'	76° 32.0'
1990	3	35° 12.5'	76° 31.0'

LOCATED ON NOS CHART - 11553 (NAD 1927; June 7, 1986)

SITE DESCRIPTION - The site center is located north-northeast of Maiden Point by 0.5 nautical mile, 0.8 nautical mile west of Minktrap Point, and 1.1 nautical miles southeast of the mouth of Drum Creek.



SOUTH CAROLINA SITES

Mussel Watch

SITE - Winyah Bay, Lower Bay, SC

SITE CODE - WBLB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 33° 14.60'N
79° 11.78'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11532 (NAD 1927)

SITE DESCRIPTION - Travel south on Route 17 passing the steel and paper mills, and go over a bridge. Turn left onto South Island Road at a convenience store. Follow the road for approximately 5 miles until reaching the Beach Ferry/Intercoastal Waterway. A boat ramp is located there.

The distance down the ship channel to the site center is approximately 10 nautical miles and is located on the northeast side of South Island, where South Island adjoins Cat Island. The site is directly east of Mosquito Creek, about 1,200 meters past Fl G "17" 2.5 about 1200 meters bearing 120 degrees.

SAMPLING METHOD - Intertidal hand collection.

SITE - Santee River, North Bay, SC

SITE CODE - SRNB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 33° 10.37'N
79° 14.92'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 11532 (NAD 1927)

SITE DESCRIPTION - Travel south on Route 17 passing steel and paper mills, and go over a bridge. Turn left onto South Island Road at a convenience store. Follow the road for approximately 5 miles until reaching the Beach Ferry/Intercoastal Waterway. A boat ramp is located there.

The distance down channel to Winyah Bay is about 5 nautical miles, to the Western Channel and its piles. Follow the channel to Esterville Minim Creek Channel south for approximately 4 nautical miles to Fl R 4s 16 ft "4". Bear left through the channel (going to the left of G "5") for about 1.5 nautical miles southeast (to the site center) to the head of Beach Creek in North Santee Bay. Bivalves were collect in the North Santee Bay west of the mouth of Beach Creek and northeast of the cut between Crow Island and Cane Island.

SAMPLING METHOD - Subtidal dredge collection.

SOUTH CAROLINA SITES

SITE - Charleston Harbor, Fort Johnson, SC

SITE CODE - CHFJ

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 32° 45.32'N
79° 52.70'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 11518 (NAD 1927)

SITE DESCRIPTION - The site is located on the south side of South Channel approximately halfway between Fort Johnson and Fort Sumter. Intertidal oysters were collected east of the South Carolina Wildlife and Marine Resources Department building.

Sediment samples consisted of mud, sand, dense clay, and shells. Sediments are collected on tidal flats at the South Carolina Wildlife and Marine Resources Department (SCWMR).

To get to the SCWMR Department in Charleston, follow Route 171 South (Folly Road) to Harbor View Road (east). At the end of the road at the Holy Cross Cemetery make a left onto Fort Johnson Road (east). Follow this road to the SCWMR facility, and check in at the gate. After the main road bears left two white houses can be seen. Park between them. The site is directly ahead at the waterline.

SAMPLING METHOD - Hand collection.

SITE - Charleston Harbor, Shutes Folly Island, SC

SITE CODE - CHSF

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 32° 46.83'N
79° 55.00'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 11518 (NAD 1927)

SITE DESCRIPTION - Intertidal oyster beds are located near the north shore of Shutes Folly Island. The preferred method of getting to the collection site is to launch a larger boat and then go ashore on Shutes Folly Island from a smaller boat.

In Charleston, take Route 17 east to the Ashley River Bridge and then take Lockwood Drive at the end of the bridge. The George M. Lockwood Municipal Marina is located at the end of Lockwood Drive.

SAMPLING METHOD - Hand collection.

SOUTH CAROLINA SITES

Benthic Surveillance

SITE - Charleston Harbor, South Channel, SC

SITE CODE - CHSSC

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 32° 45.4'N
79° 54.4'W

WATER DEPTH AT
NOMINAL CENTER - 9 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	32° 45.6'	79° 54.6'
1986	32° 45.4'	79° 53.1'
1987	32° 45.4'	79° 53.3'
1989	32° 45.3'	79° 54.7'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	32° 45.4'	79° 55.1'
1984	2	32° 45.4'	79° 54.5'
1984	3	32° 45.5'	79° 54.2'
1985	1	32° 45.4'	79° 55.1'
1985	2	32° 45.4'	79° 54.5'
1985	3	32° 45.4'	79° 54.3'
1986	1	32° 45.3'	79° 55.1'
1986	2	32° 45.4'	79° 54.5'
1986	3	32° 45.5'	79° 54.3'
1987	1	32° 45.3'	79° 53.1'
1987	2	32° 45.4'	79° 54.5'
1987	3	32° 45.4'	79° 54.3'
1989	1	32° 45.4'	79° 55.0'
1989	2	32° 45.4'	79° 54.6'
1989	3	32° 45.3'	79° 54.1'

LOCATED ON NOS CHART - 11518 (NAD 1927; June 27, 1987)

SITE DESCRIPTION - The site center is found south of the South Channel, northwest of Fort Johnson and south of Shutes Folly Island, 0.72 nautical mile southeast of channel marker 20 R G "BP" Fl (2+1) R 6 sec on the north side of the channel, and 1 nautical mile southwest of the Fl Y 4 sec "L" buoy.

SOUTH CAROLINA SITES

SITE - Charleston Harbor, Coastal, SC

SITE CODE - CHSCO

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 32° 50.1'N
79° 40.2'W

**WATER DEPTH AT
NOMINAL CENTER** - 9 meters

CENTER OF FISHING ACTIVITIES:

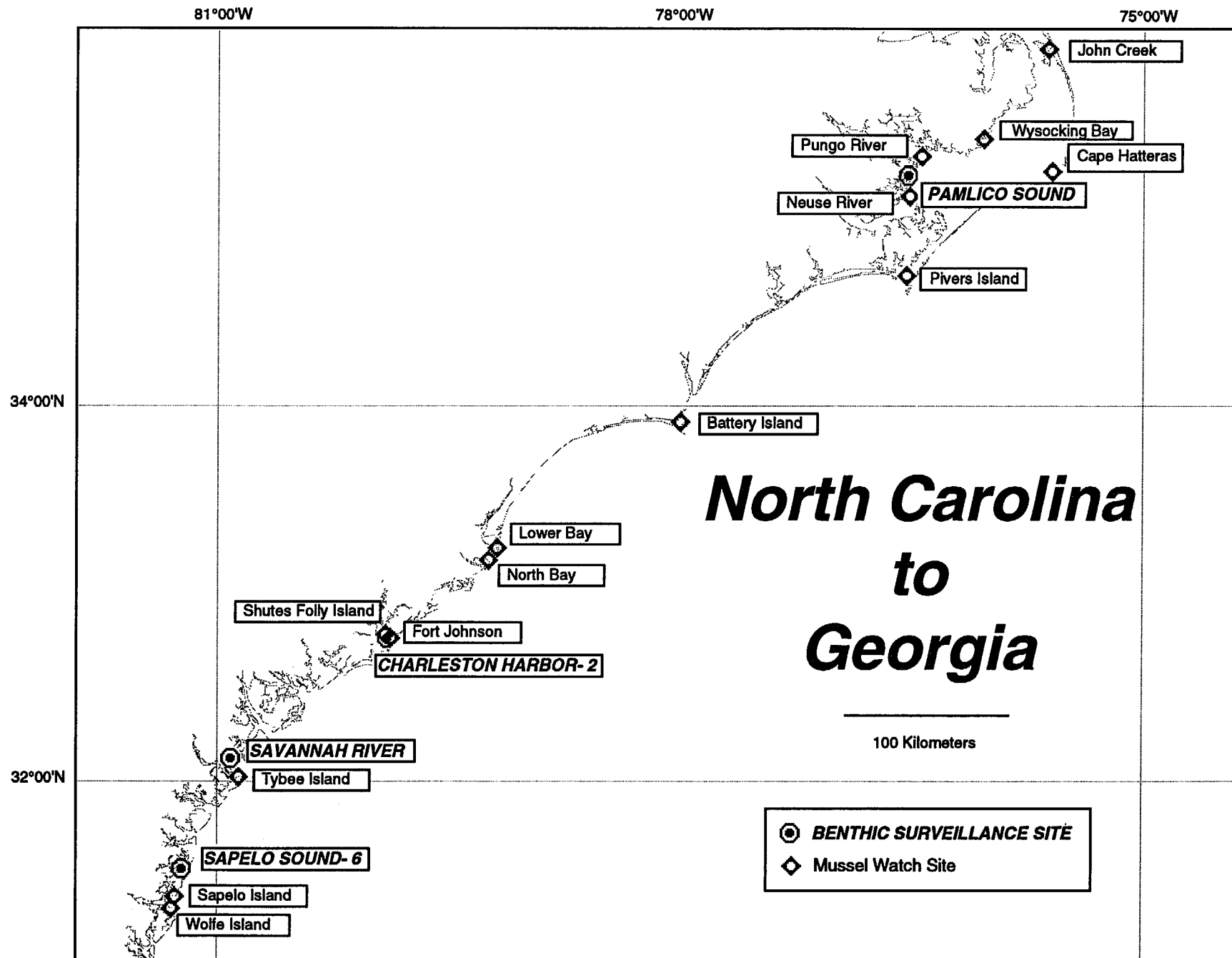
SAMPLE YEAR
1985

LATITUDE (N)
32° 50.1'

LONGITUDE (W)
79° 40.2'

LOCATED ON NOS CHART - 11520 (NAD 1927; February 8, 1986)

SITE DESCRIPTION - This site is located along the South Carolina coastline, north of Charleston at the mouth of Capers Inlet. It is 1 nautical mile south of Capers Island and 0.7 nautical miles north of the R N"2" marker.



GEORGIA SITES

Mussel Watch

SITE - Savannah River Estuary, Tybee Island, GA

SITE CODE - SRTI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 32° 01.20'N
80° 52.25'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 11512 (NAD 1927)

SITE DESCRIPTION - This site, just off the north shore of Tybee Island in South Channel, is a former Environmental Protection Agency Mussel Watch site. Oyster beds are accessible from land, north of Route 80. Hand collections can be made at low tide. Park on the short dead-end road opposite Chimney Creek Fish Camp Road, off the west-bound lane of Route 80 on the east side of Lazaretto Creek Bridge, approximately 0.5 miles east of Walsh's Dock Road. Hike approximately 0.5 miles through the marsh. Bivalves grow in dense aggregates and must be separated with a hammer.

Sediments are collected adjacent to the site.

SAMPLING METHOD - Intertidal hand collection.

SITE - Sapelo Sound, Sapelo Island, GA

SITE CODE - SSSI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 31° 23.20'N
81° 17.33'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 11507 (NAD 1927)

SITE DESCRIPTION - Take Route 17 south in Darien to Route 99 and go north towards Ridgeville. At Ridgeville turn right to proceed to the McIntosh Rod and Gun Club. The club is on the North River and has a ramp. Travel by boat from McIntosh Rod & Gun Club through the Back River, across Doboy Sound. The site is between the mouth of Dean Creek and the abandoned lighthouse on Sapelo Island. Oyster bars are prevalent near the edge of the marsh to the west of Dean's Creek and extend west to the lighthouse. Bivalves can be reached from shore and intertidal populations were sampled by hand. Access to the site is possible by taking a ferry to Sapelo Island. Bivalves can be reached from shore.

Sediments are fine-grained mud.

GEORGIA SITES

This former Environmental Protection Agency Mussel Watch site is part of the National Estuarine Sanctuary.

SAMPLING METHOD - Intertidal hand collection.

SITE - Altamaha River, Wolfe Island, GA

SITE CODE - ARWI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 31° 19.37'N (Bivalves) **WATER DEPTH** - 0.3 meter
81° 18.48'W

31° 19.62'N (Sediments)
81° 19.50'W

LOCATED ON NOS CHART - 11507 (NAD 1927)

SITE DESCRIPTION - Take Route 17 south in Darien, Georgia to Route 99, go north towards Ridgeville. At Ridgeville turn right to proceed to the McIntosh Rod and Gun Club. The club is on the North River and has a ramp. In a small boat follow the North River east to G "181", turn left, and head south to Little Mud River and Altamaha River (G "195"). The sediment site center is located at this intersection. The bivalve site center is due east at the QK Fl G 12ft "A" channel marker. At this point bivalves are collected along the shoreline. Sediments were found north of Dolbow Island.

SAMPLING METHOD - Intertidal hand collection at low tide, or rake from boat at mid-tide.

GEORGIA SITES

Benthic Surveillance

SITE - Savannah River, Elba Island, GA

SITE CODE - SAVEI

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1990)
Arius felis (hardhead catfish) (1990)

NOMINAL SITE CENTER - 32° 05.8'N
80° 59.8'W

WATER DEPTH AT
NOMINAL CENTER - 7 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1990	32° 05.9'	80° 59.9'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	1	32° 06.2'	81° 00.4'
1990	2	32° 05.8'	82° 59.8'
1990	3	32° 05.4'	82° 59.5'

LOCATED ON NOS CHART - 11507 (NAD 1927; February 15, 1986)

SITE DESCRIPTION - This site is located north of Elba Island in the Savannah River in the Bight Channel. It is 0.1 nautical miles west of Qk Fl 16ft, 0.2 nautical miles east of Fl G 4 sec 16ft 4m"45", and 0.15 nautical miles west-southwest of E Int 6sec 44ft.

SITE - Sapelo Sound, High Point, GA

SITE CODE - SAPHP

TARGET SPECIES - *Leiostomus xanthurus* (spot)

NOMINAL SITE CENTER - 31° 32.3'N
81° 14.5'W

WATER DEPTH AT
NOMINAL CENTER - 7 meters

GEORGIA SITES

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	31° 31.4'	81° 15.2'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	31° 31.7'	81° 14.5'
1984	2	31° 32.2'	81° 13.6'
1984	3	31° 32.7'	81° 14.8'
1985	1	31° 31.7'	81° 14.5'
1985	2	31° 32.2'	81° 13.7'
1985	3	31° 32.6'	81° 14.9'
1986	1	31° 31.7'	81° 14.5'
1986	2	31° 32.2'	81° 13.7'
1986	3	31° 32.6'	81° 14.9'
1987	A1	31° 31.5'	81° 14.5'
1987	A2	31° 32.1'	81° 13.7'
1987	A3	31° 32.7'	81° 14.9'
1987	O1	31° 31.7'	81° 14.5'
1987	O2	31° 32.2'	81° 13.7'
1987	O3	31° 32.6'	81° 14.8'
1987	J1	31° 31.7'	81° 14.5'
1987	J2	31° 32.2'	81° 13.7'
1987	J3	31° 32.6'	81° 14.9'
1989	1	31° 31.7'	81° 14.5'
1989	2	31° 32.1'	81° 13.5'
1989	3	31° 32.7'	81° 14.9'

LOCATED ON NOS CHART - 11507 (NAD 1927; February 15, 1986)

SITE DESCRIPTION - The site center is located south of the Intracoastal Waterway and north-northwest of High Point at the mouth of the Mud River in Sapelo Sound. It is 0.2 nautical miles southeast of marker G "143", 0.7 nautical miles east-southeast of the Fl G 4 sec 12ft 4m "145" buoy, and 0.8 nautical miles southwest of the Fl R 4 sec 16ft 3 M "142".

SITE - Sapelo Sound, Barbour Island River, GA

SITE CODE - SAPBI

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 31° 34.8'N
81° 14.5'W

WATER DEPTH AT
NOMINAL CENTER - 7 meters

GEORGIA SITES

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	31° 34.7'	81° 14.6'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	31° 34.7'	81° 14.5'
1987	2	31° 34.8'	81° 14.4'
1987	3	31° 34.8'	81° 14.5'

LOCATED ON NOS CHART - 11507 (NAD 1983; June 22, 1991)

SITE DESCRIPTION - This site is located 2.5 nautical miles up the Barbour Island River from the R "140A" PA marker in Sapelo Sound.

SITE - Sapelo Sound, Dog Hammock, GA

SITE CODE - SAPDH

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 31° 31.9'N
81° 17.5'W

**WATER DEPTH AT
NOMINAL CENTER** - 5.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	31° 31.2'	81° 16.9'
1989	31° 31.7'	81° 16.8'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	31° 31.5'	81° 17.4'
1987	2	31° 31.9'	81° 17.8'
1987	3	31° 32.3'	81° 17.2'

LOCATED ON NOS CHART - 11507 (NAD 1927; February 15, 1986)

GEORGIA SITES

SITE DESCRIPTION - This site center is located in the Sapelo River, north of Front River and south of Four mile Point. It is 0.5 nautical miles south-southwest of Fl G 4 sec "151" and 0.9 nautical miles west of the Fl G 4 sec "149" marker.

- * The tissue sample for this site was combined with SAPIN in 1989 because of an insufficient number of fish.

SITE - Sapelo Sound Inlet, GA

SITE CODE - SAPIN

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)
Leiostomus xanthurus (spot)

NOMINAL SITE CENTER - 31° 32.5'N
 81° 11.8'W

**WATER DEPTH AT
 NOMINAL CENTER** - 5.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1985	31° 32.6'	81° 11.6'
1986	31° 32.6'	81° 11.9'
1987	31° 32.3'	81° 11.0'
1989	31° 31.8'	81° 09.5' *

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	31° 32.2'	81° 12.4'
1987	2	31° 32.6'	81° 11.2'
1987	3	31° 32.7'	81° 12.0'

LOCATED ON NOS CHART - 11507 (NAD 1927; February 15, 1986)

SITE DESCRIPTION - This site is located in Sapelo Sound, north of Blackbeard Island and south of the South Newport River mouth. It is 0.62 nautical miles northeast of G"11" marker, 0.49 nautical miles south-southwest of the Fl R 4 sec 12ft 3m "138" PA marker, and 0.89 nautical miles west of the N"10" marker.

- * The tissue sample for this site was combined with SAPDH in 1989 because of an insufficient number of fish.

GEORGIA SITES

SITE - Sapelo Sound, South Newport River, GA

SITE CODE - SAPSN

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 31° 38.6'N
81° 15.4'W

**WATER DEPTH AT
NOMINAL CENTER** - 5.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	31° 38.5'	81° 15.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	31° 38.8'	81° 15.5'
1987	2	31° 38.6'	81° 15.4'
1987	3	31° 38.3'	81° 14.6'

LOCATED ON NOS CHART - 11511 (NAD 1983, June 9, 1990)

SITE DESCRIPTION - This site is on the western shoreline of the South Newport River, north of Sapelo Sound near Thomas Landing. It is less than 0.1 nautical miles off of Harris Neck.

SITE - Sapelo Sound, Johnson Creek, GA

SITE CODE - SAPJC

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 31° 38.9'N
81° 11.4'W

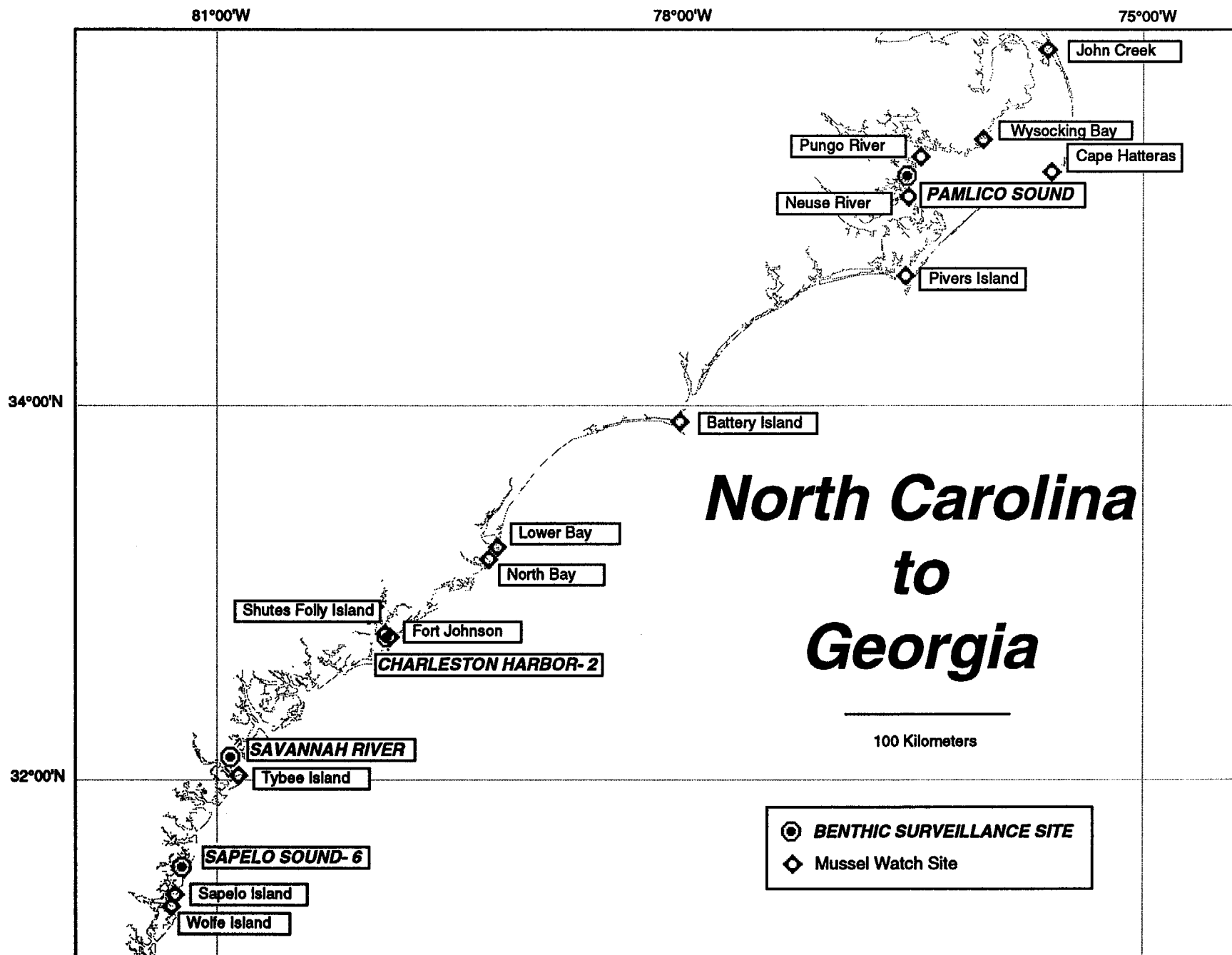
**WATER DEPTH AT
NOMINAL CENTER** - 2 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	31° 38.9'	81° 11.4'

LOCATED ON NOS CHART - 11511 (NAD 1983; June 09, 1990)

SITE DESCRIPTION - This site is located on the west side of the intracoastal waterway in Johnson Creek, 0.5 nautical miles north of where Johnson Creek and Cattle Pen Creek meet.



FLORIDA SITES

Mussel Watch

SITE - St. Johns River, Chicopit Bay, FL

SITE CODE - SJC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 22.62'N
81° 26.63'W

WATER DEPTH - 0.6 meter

LOCATED ON NOS CHART - 11489 (NAD 1927)

SITE DESCRIPTION - This site is located at the easternmost mud flats of Chicopit Bay. The Florida Department of Natural Resources also has a sampling site in this area called the Fort George River Marsh located at 30° 27.2'N, 81° 25.6'W, which is monitored regularly for trace metals. Bivalves are collected from intertidal beds which can be accessed by land.

SAMPLING METHOD - Hand collection.

SITE - Matanzas River, Crescent Beach, FL

SITE CODE - MRC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 46.00'N
81° 15.38'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 11485 (NAD 1927)

SITE DESCRIPTION - The site is on south side of the causeway connecting the mainland to Crescent Beach. The area is very shallow with extensive mud flats. Nearby sites are monitored by the Florida Department of Natural Resources. Collections are made intertidally by hand.

Travel Route 1 south to Route 206 east to Crescent Beach. The site is on the mainland south side of the Bascule Bridge which crosses the Matanzas River and connects the mainland to Crescent Beach. Parking is to the right-hand side of the bridge before crossing, and the site is directly along the shoreline in front of the parking area.

SAMPLING METHOD - Intertidal hand collection.

FLORIDA SITES

SITE - Indian River, Sebastian River, FL

SITE CODE - IRSR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 50.09'N (Bivalve) **WATER DEPTH** - 0.2 meter
80° 28.65'W

27° 51.06'N (Sediment)
80° 28.70'W

LOCATED ON NOS CHART - 11472

SITE DESCRIPTION - Bivalves are located to the left of an old pier in the Sebastian River. To access the bivalve site from Melbourne, travel south on Route 1 to Indian River County, and go left on to Indian River Drive. Directly past the bridge over the Sebastian River approximately 1.2 miles on the left is an old pier. Bivalves are to the left of the pier. This site is intertidal with subtidal extensions.

SAMPLING METHOD - Hand collection.

SITE - North Miami, Maule Lake, FL

SITE CODE - NMML

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 25° 56.13'N **WATER DEPTH** - 0.1 meter
80° 08.77'W

LOCATED ON NOS CHART - 11467 (NAD 1927)

SITE DESCRIPTION - Access to the oyster site is as follows: Travel Route 826, and turn left on to Route 1. Go approximately 0.9 miles. Bivalves are just north of Jericho Boats.

SAMPLING METHOD - Intertidal hand collection.

FLORIDA SITES

SITE - Biscayne Bay, Gould's Canal, FL

SITE CODE - BBGC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 25° 31.39'N
80° 18.85'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11462 (NAD 1927)

SITE DESCRIPTION - Intertidal bivalves are collected on the south side of the Gould's Canal breakwater. Bivalve beds exist on coral at the end of the stand of trees

SAMPLING METHOD - Intertidal hand collection.

SITE - Biscayne Bay, Princeton Canal, FL

SITE CODE - BBPC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 31.13'N
80° 19.75'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11462 (NAD 1927)

SITE DESCRIPTION - Oysters are found in shallow (<1 meter) water on the banks at the mouth of Princeton canal and along the peninsula on the northern side of Princeton Canal, west of the spoil islands. Water turbidity precludes efficient use of a rake or tongs, while rocks and shoals prevent effective dredging. Gloves and diving boots are useful. Snorkeling is the best method for collecting oysters at this site.

Depositional "sediments," composed largely of sea grass detritus, are found only in the center of the canal between the north peninsula and the westernmost spoil island.

SAMPLING METHOD - Subtidal hand collection.

FLORIDA SITES

Benthic Surveillance

SITE - St. Johns River, Arlington Channel, FL

SITE CODE - SJRAC

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1985, 1987, 1989)
Leiostomus xanthurus (spot) (1984, 1985)

NOMINAL SITE CENTER - 30° 21.0'N
81° 36.8'W

**WATER DEPTH AT
NOMINAL CENTER** - 1.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	30° 23.2'	81° 32.3' *
1985	30° 21.0'	81° 36.8'
1987	30° 20.7'	81° 36.9'
1989	30° 21.7'	81° 37.0'

LOCATED ON NOS CHART - 11491 (NAD 1927; July 13, 1985)

SITE DESCRIPTION - This site is located in the St. Johns River east of Terminal Channel , 0.4 nautical miles southeast of marker "75" Fl G 4 sec, and 0.5 nautical miles northeast of the C "75A" marker.

* The tissue sample for this site was combined with SJRQI in 1984 because of an insufficient number of fish.

SITE - St. Johns River, West Mill Cove, FL

SITE CODE - SJRMC

TARGET SPECIES - No fish collection at this site.

NOMINAL SITE CENTER - 30° 23.6'N
81° 36.5'W

**WATER DEPTH AT
NOMINAL CENTER** - 1.5 meters

FLORIDA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	30° 24.0'	81° 36.3'
1984	2	30° 22.7'	81° 32.3'
1984	3	30° 22.5'	81° 37.2'
1985	1	30° 24.0'	81° 36.3'
1985	2	30° 22.6'	81° 32.5'
1985	3	30° 22.5'	81° 37.0'
1986	1	30° 24.0'	81° 36.3'
1986	2	30° 22.1'	81° 31.5'
1986	3	30° 23.4'	81° 38.2'
1987	1	30° 23.9'	81° 36.4'
1987	2	30° 23.5'	81° 36.3'
1987	3	30° 23.4'	81° 35.8'
1989	1	30° 24.0'	81° 36.4'
1989	2	30° 23.6'	81° 36.2'
1989	3	30° 23.4'	81° 35.8'

LOCATED ON NOS CHART - 11491 (NAD 1927; July 13, 1985)

SITE DESCRIPTION - The site center is located south of Drummond Creek Range and east of Trout River Cut Range in the western area of Mill Cove, 0.7 nautical miles northeast of Reddie Point.

SITE - St. Johns River, Piney Point, FL

SITE CODE - SJRPP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 14.4'N
81° 39.4'W

**WATER DEPTH AT
NOMINAL CENTER** - 7 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1986	30° 14.1'	81° 39.3'
1987	30° 14.2'	81° 39.3'

FLORIDA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	30° 14.6'	81° 39.5'
1987	2	30° 14.6'	81° 39.4'
1987	3	30° 14.3'	81° 39.2'

LOCATED ON NOS CHART - 11491 (NAD 1927; July 13, 1985)

SITE DESCRIPTION - The site center is located 0.6 nautical miles northeast of Piney Point and 0.9 nautical miles southwest of Christopher Point.

SITE - St. Johns River, Orange Point, FL

SITE CODE - SJROP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 09.7'N
81° 40.9'W

**WATER DEPTH AT
NOMINAL CENTER** - 9 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	30° 09.8'	81° 41.1'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	30° 09.5'	81° 41.0'
1987	2	30° 09.7'	81° 40.9'
1987	3	30° 09.8'	81° 40.9'

LOCATED ON NOS CHART - 11492 (NAD 1927; January 4, 1987)

SITE DESCRIPTION - This site center is located north of Mandarin Point, northeast of Orange Point and Doctors Inlet, and southwest of Plummers Cove. It is located 0.4 nautical miles northwest of Fl G 4 sec 16ft 4m "11".

FLORIDA SITES

SITE - St. Johns River, Ortega River, FL

SITE CODE - SJROR

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 16.6'N
81° 42.6'W

**WATER DEPTH AT
NOMINAL CENTER** - 3 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	30° 16.6'	81° 42.6'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	30° 16.2'	81° 43.1'
1987	2	30° 16.7'	81° 42.6'
1987	3	30° 16.9'	81° 42.3'

LOCATED ON NOS CHART - 11491 (NAD 1927; January 24, 1987)

SITE DESCRIPTION - This site center is located south of St. Johns Park and northwest of Ortega in the Ortega River. It is 0.3 nautical miles southwest of the bridge that spans the Ortega River, in the middle of the channel.

SITE - St. Johns River, Trout River, FL

SITE CODE - SJRTR

TARGET SPECIES - No fish collection at this site.

NOMINAL SITE CENTER - 30° 23.7'N
81° 38.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 2 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	30° 23.7'	81° 38.4'
1987	2	30° 23.7'	81° 38.7'
1987	3	30° 23.7'	81° 39.0'

FLORIDA SITES

LOCATED ON NOS CHART - 11491 (NAD 1927; July 13, 1985)

SITE DESCRIPTION - This site is located 1.3 nautical miles up from the mouth of the river, and 0.2 nautical miles down from the first fixed bridge to span the river.

SITE - St. Johns River, Quarantine Island Upper Range, FL

SITE CODE - SJRQI

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1987)
Leiostomus xanthurus (spot) (1984)

NOMINAL SITE CENTER - 30° 23.5'N
 81° 34.1'W

**WATER DEPTH AT
 NOMINAL CENTER** - 10 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	30° 23.2'	81° 32.3' *
1987	30° 23.5'	81° 34.1'

LOCATED ON NOS CHART - 11491 (NAD 1927; July 13, 1985)

SITE DESCRIPTION - This site is located on the north side of the Quarantine Island Upper Range near Dames Point Manor, just north of Fl R 4 sec "50".

* The tissue sample for this site was combined with SJRAC in 1984 because of an insufficient number of fish.

FLORIDA SITES

SITE - Biscayne Bay, North Bay, FL

SITE CODE - BISNB

TARGET SPECIES - *Lagodon rhomboides* (pinfish)

NOMINAL SITE CENTER - 25° 48.9'N
80° 09.6'W

**WATER DEPTH AT
NOMINAL CENTER** - 1.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1990	25° 49.1'	80° 10.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	1	25° 48.8'	80° 09.6'
1990	2	25° 48.9'	80° 08.7'
1990	3	25° 49.1'	80° 10.0'

LOCATED ON NOS CHART - 11467 (NAD 1927; November 30, 1985)

SITE DESCRIPTION - This site is located in Biscayne Bay west of Miami Beach, 0.3 nautical miles north of the Julia Tuttle Causeway.

SITE - Biscayne Bay, Chicken Key, FL

SITE CODE - BISCK

TARGET SPECIES - *Lagodon rhomboides* (pinfish)

NOMINAL SITE CENTER - 25° 36.9'N
80° 17.6'W

**WATER DEPTH AT
NOMINAL CENTER** - 3 meters

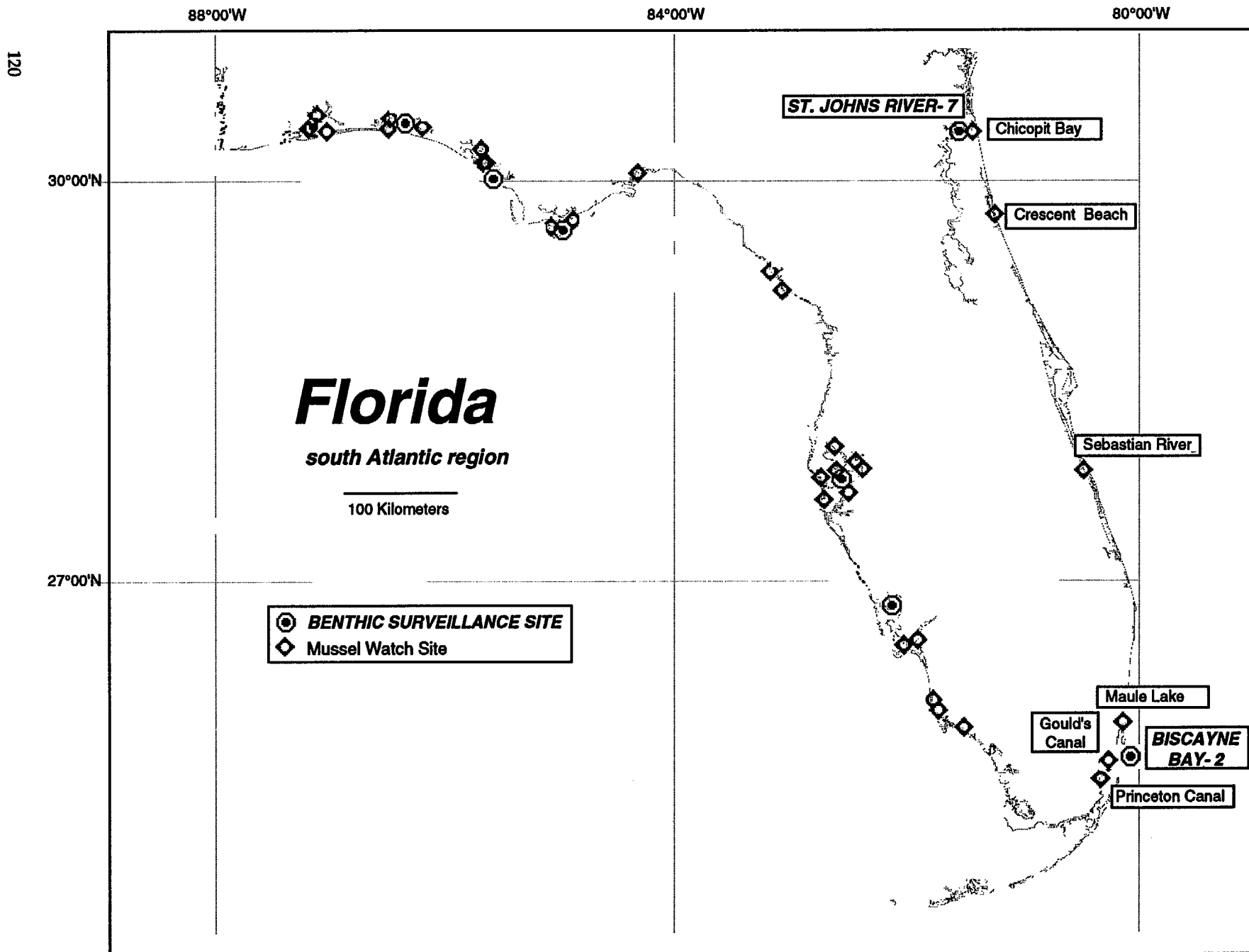
CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1990	25° 37.0'	80° 17.1'

FLORIDA SITES

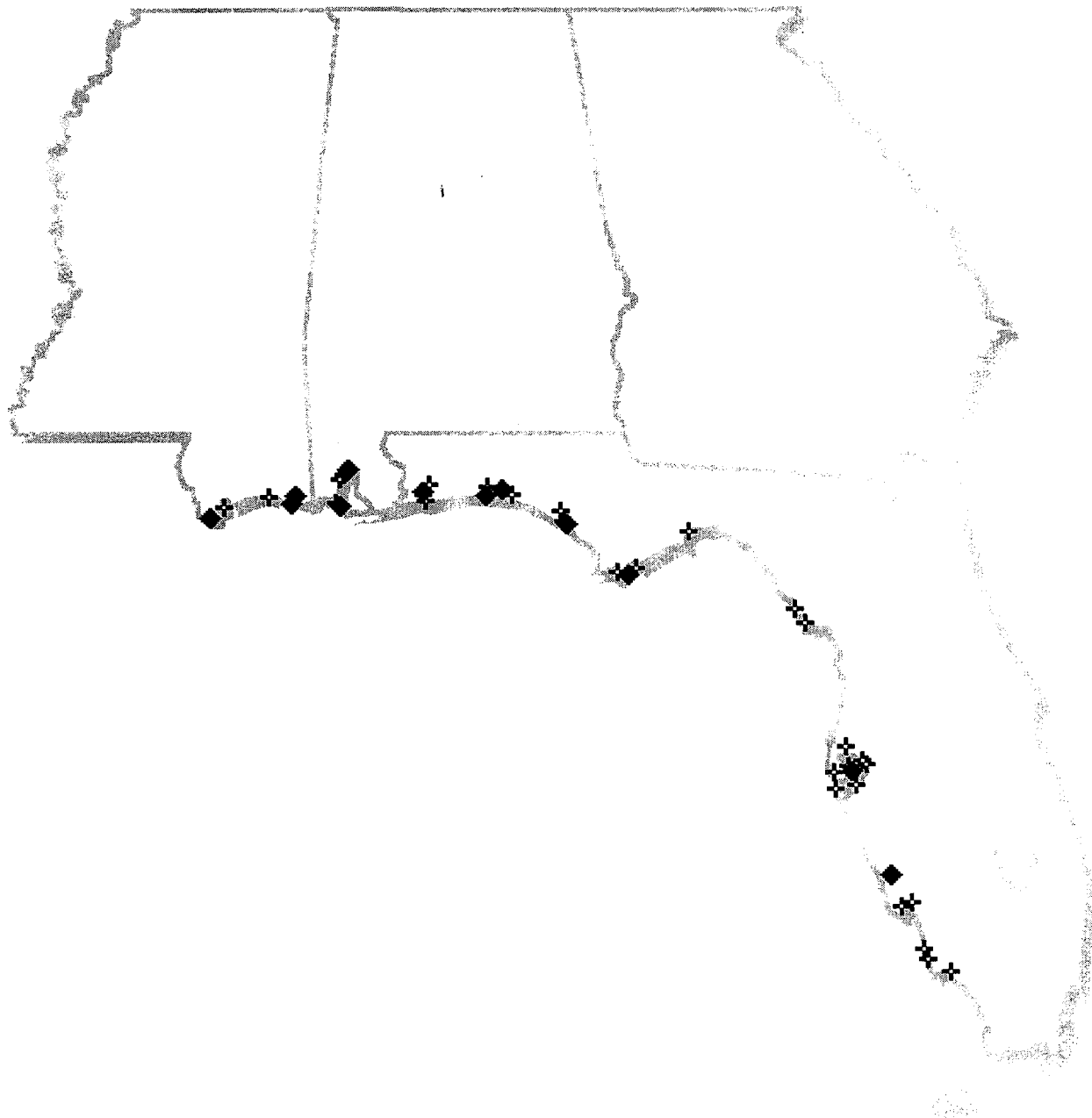
LOCATED ON NOS CHART - 11465 (NAD 1927; March 3, 1984)

SITE DESCRIPTION - This site is located on the west side of Biscayne Bay, east-southeast of Chicken Key in the Cutler Channel, 0.1 nautical miles southeast of the R N "4" marker.



NATIONAL STATUS & TRENDS PROGRAM

Eastern Gulf of Mexico



- ✚ Mussel Watch Project
- ◆ Benthic Surveillance Project

FLORIDA SITES

Mussel Watch

SITE - Everglades, Faka Union Bay, FL

SITE CODE - EVFU

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 25° 54.08'N
81° 30.78'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 11430 and 11429 (both NAD 1927; July 21, 1984 and December 15, 1984)

SITE DESCRIPTION - The site is accessed by driving to Port of the Islands Resort south of Naples on U.S. Highway 41, and launching at the resort. Proceed south along a man-made channel to Faka Union Bay. Faka Union Bay is located in the Cape Romano-Ten Thousand Islands Aquatic Preserve. An intertidal reef surrounds a mangrove island. The sample site is on a mangrove island near channel marker 53.

Sediments were taken at each oyster station among the mangrove roots.

SAMPLING METHOD - Oysters were collected by hand and sediments with a Teflon® scoop.

SITE - Rookery Bay, Henderson Creek, FL

SITE CODE - RBHC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 26° 01.50'N
81° 44.20'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 11430 and 11429 (both NAD 1927)

SITE DESCRIPTION - The site is accessed by driving east on Florida 951, approximately 3.5 miles from the intersection of U.S. Highway 41 and Florida 951. Turn right on a large shell road and proceed to the Rookery Monument, past the Rookery Headquarters and boat ramp. The site is located in Rookery Bay Aquatic Preserve in Henderson Creek. The site is near the mouth of the creek. Oysters were collected by hand from a subtidal reef along the shore and from mangrove roots near the monument.

Sediments were taken from among the mangrove roots.

SAMPLING METHOD - Oysters were collected by hand and sediments with a Teflon scoop.

FLORIDA SITES

SITE - Naples Bay, Naples Bay, FL

SITE CODE - NBNB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 26° 06.78'N
81° 47.15'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 11430 and 11429 (both NAD 1927; July 21, 1984 and December 15, 1984)

SITE DESCRIPTION - Boat launch is from Bayland Park on the south side of Naples. The site is accessible almost directly from the interstate via the exit for Marco Island. Proceed north from the park to channel marker 24. The oyster reefs were to the east and adjacent to channel marker 24. The reefs were old, primarily consolidated and cemented with old shell fragments.

Fine sediments were located only in very small, isolated pockets found by chance, and in boating channels dredged to fill the home sites.

SAMPLING METHOD - Sediments were collected with a box corer and oysters were collected using tongs and by hand.

SITE - Charlotte Harbor, Fort Meyers, FL

SITE CODE - CBFM

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 26° 33.50'N
81° 55.37'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHARTS - 11426 and 11427 (both NAD 1927)

SITE DESCRIPTION - This site can be reached by a boat launched at the public boat ramp at Redfish Point. Then proceed up the Calooshattee River to the Cape Coral Bridge. The site is located on the east end of the bridge on both sides of the highway. Small oyster clumps along with clams and barnacles were attached along the base of the bridge and in clumps on the sand and shell bottom.

Sediments were collected 50-100 meters offshore from the oyster stations.

SAMPLING METHODS - Oysters were collected by hand and sediments with a box corer.

FLORIDA SITES

SITE - Charlotte Harbor, Bird Island, FL

SITE CODE - CBBI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 26° 30.73'N
82° 02.18' W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHARTS - 11426 and 11427 (both NAD 1927)

SITE DESCRIPTION - Boat launch is at the marina next to St. James Restaurant on the main road which runs the length of Pine Island. Proceed down the canal, turn left and enter the bay. The site is located in San Carlos Bay in the Matlacha Pass National Wildlife Refuge. The site is on a reef which is directly north of Bird Island and northeast of Merwin Key. Collections were made on the submerged reef approximately 150 meters from Bird Island.

Sediments were collected adjacent to the oyster stations.

SAMPLING METHOD - Sediments were collected with a box corer and oysters were collected using tongs or by hand.

SITE - Tampa Bay, Cockroach Bay, FL

SITE CODE - TBCB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 40.55'N
82° 30.56'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11414 (NAD 1927)

SITE DESCRIPTION - The site is accessed by driving to Highway 41 and taking Cockroach Bay Road west. The launch ramp is at the end of the road. Access to the site requires winding around many small islands to the open bay to the east. Upon entering the open bay, proceed east to a very small island (mostly subtidal) near the southeast shore. The site was located on an exposed reef on the south side of Cockroach Bay. Oysters were collected by hand from the subtidal portions of an exposed reef on the south side of the bay.

Sediments were found in isolated pockets around this reef.

SAMPLING METHOD - Oysters were collected by hand. Sediments were sampled by hand with a Teflon scoop, and required compositing samples from many scoops in different pockets to acquire sufficient material.

FLORIDA SITES

SITE - Tampa Bay, Hillsborough Bay, FL

SITE CODE - TBHB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 51.28'N
82° 23.75'W

WATER DEPTH - 0.6 meter

LOCATED ON NOS CHART - 11413 (NAD 1927; April 14, 1984)

SITE DESCRIPTION - A boat may be launched at the ramp on the northwest corner of the Highway 41 bridge over the Alafia River. This site is located on the north bank of the Alafia River. The sites were established along the riprap shoreline on the east side of channel marker 15.

Sediments of fine texture in close proximity to and representative of the site were not possible to locate. Therefore, a site was selected approximately 0.5 miles east of the oyster collection stations.

SAMPLING METHOD - Oysters were collected by hand and sediments with a box corer.

SITE - Tampa Bay, Old Tampa Bay, FL

SITE CODE - TBOT

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 01.48'N
82° 37.95'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11413 (NAD 1927)

SITE DESCRIPTION - To reach the site, take Highway 275 to Highway 92 west and then take Hillsborough Avenue toward Tampa Bay Downs. Turn south on Double Branch Road and proceed to State Street. Turn left and go to the boat ramp at the end of the street. All sampling reefs are clearly visible and partially exposed at low tide, but are still easily accessible at high tide by wading.

Sediments were co-located with the oysters.

SAMPLING METHOD - Oysters were sampled by hand and sediments with a Teflon scoop.

FLORIDA SITES

SITE - Tampa Bay, Peter O. Knight Airport, FL

SITE CODE - TBKA

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 54.46'N
82° 27.29'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 11413 (NAD 1927)

SITE DESCRIPTION - The site is located on the south end of the Davis Islands, adjacent to the Peter O. Knight airport, the Davis Islands Yacht Club, and the seaplane basin. Oysters were collected on a jetty which extends from the end of the runway into the bay. To reach this site from St. Petersburg, take I-275 east to exit 24. Go south on Armenia to Swann Avenue, then east to join Bayshore Boulevard, and cross the bridge to the Davis Islands. Stay on west Davis Boulevard and then exit right on Airport to Marinique, which follows the sea wall. Oysters are intertidal and are attached to the rocks of the jetty.

Sediments were collected adjacent to the oyster sites.

SAMPLING METHOD - Oysters were collected by hand and sediments were collected from along the sea wall using a box corer.

SITE - Tampa Bay, Papys Bayou, FL

SITE CODE - TBPB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 50.53'N
82° 36.62'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 11413 (NAD 1927)

SITE DESCRIPTION - The site is accessed by boat departing the city marina in St. Petersburg and crossing the west side of Tampa Bay to Papys Bayou (approximately 30 minutes), or more easily by driving to the Weeden Island Wildlife Refuge via Weeden Drive.

The oyster site in 1986 was a small intertidal reef at the back end of the bayou (follow channel markers to where the reef almost blocks the channel) and the mangrove roots along the adjacent shoreline. A wood-and-steel, pier-type structure was at the end of the bayou where samples were taken. In 1987, the station was moved to within 100 meters of the old bridge at the end of Weeden Drive. Oysters were collected on a submerged oyster reef surrounding an old wooden and metal structure on the east side of the bayou in a mangrove area. Landmarks to locate the site are 140 degrees from the tall radio tower and 195 degrees from the smokestacks at the power plant. Sediments were collected on Weeden Island north of Harbor Isle.

SAMPLING METHOD - Oysters were collected by hand and sediments with a box corer.

FLORIDA SITES

SITE - Tampa Bay, Mullet Key Bayou, FL

SITE CODE - TBMK

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 37.28'N
82° 43.62'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 11411 and 11414 (both NAD 1927)

SITE DESCRIPTION - The site is accessed from Fort DeSoto County Park on Mullet Key. To reach the site, take Highway 679 to Anderson Boulevard. Take a right onto Anderson Boulevard, then turn right (north) onto a small shell road north of the pier parking lot. Travel until the road ends at the water.

The site is located in the southwest corner of Mullet Key Bayou north of Family Fishing Pier 1. Oysters were collected at the edge of the shore (near Fort Road) in intertidal waters on the sand bottom and on mangrove roots at three locations roughly 200 meters apart.

Sediment samples were taken 10 meters away from each oyster station.

SAMPLING METHOD - Oysters were collected by hand and sediments with a box corer.

SITE - Tampa Bay, Navarez Park, FL

SITE CODE - TBNP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 47.28'N
82° 45.28'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 11411 and 11413 (both NAD 1927)

SITE DESCRIPTION - The site is located at the boat ramp in Navarez Park which is located on the east side of Boca Ciega Bay north of the Treasure Island Causeway. To reach the site, travel west on 5th Avenue North and turn north on Park Street. Turn off of Park Street to the west onto Elbow Lane.

This site has an old boat basin and sand ramp that are no longer used, two concrete ramps and a fishing pier.

Sediments are located within the small boat basin.

SAMPLING METHOD - Oysters were collected by hand and sediments with a box corer.

FLORIDA SITES

SITE - Cedar Key, Black Point, FL

SITE CODE - CKBP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 12.32'N
83° 04.25'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 11408 (NAD 1927, September 15, 1984)

SITE DESCRIPTION - Access to the site is by boat launched at the city boat basin at the end of Highway 24 in Cedar Key. Shoals require that the channel markers be followed from the city marina to Derreck Key. The oyster site is located on the northeast side of a U-shaped island adjacent to channel marker 2 at Derreck Key. Approximate run time to the site is an hour. A boat may also be launched at a boat ramp north of Cedar Key at the end of Highway 326 off of Highway 347. The ramp is very shallow and launching at low tide is difficult, but the site can be reached in less than 10 minutes. From the boat ramp go south approximately 1 kilometer.

Oysters were collected from the subtidal perimeter of the small island. At low tide there are numerous exposed oyster reefs. The oyster site was located at a crescent-shaped reef with smooth cordgrass on the west side, west of an island with three palm trees and one topless palm. The stations were located inside the crescent.

Sediments were collocated with each of the oyster stations.

SAMPLING METHOD - Oysters were sampled using tongs and by hand. Sediments were collected with a box corer.

SITE - Suwannee River, West Pass, FL

SITE CODE - SRWP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 19.75'N
83° 10.45'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11408 (NAD 1927; September 15, 1984)

SITE DESCRIPTION - This site is accessible only by small boat. Access is from the Suwannee Marina located near the middle of town. From the boat launch proceed southwest to the first channel to the north. Proceed slowly up the channel, which passes through Suwannee. The channel passes under a bridge and then bends left, passes under another bridge, then turns left and then right. Turn north at the last house on the right into another channel and proceed until it intersects a channel with markers. Proceed out to channel marker 20 and go north for

FLORIDA SITES

approximately 2 kilometers to Cat Island. At low tide the reef is exposed and numerous small oysters are present. Oysters can be collected by hand or tonged.

A sawgrass marsh surrounds this site and the sediments are an organic peaty mud.

SAMPLING METHODS - Sediments were collected using a box corer, oysters were taken with tongs and by hand.

SITE - Apalachee Bay, Spring Creek, FL

SITE CODE - AESP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 03.75'N
84° 19.37'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11405 (NAD 1927)

SITE DESCRIPTION - To reach the site turn off of U.S. Highway 98 onto Highway 375 and proceed to Highway 365. Turn left and go to the end of the road. Proceed out of the marked channel to the collection site.

This site is located on the west side of Apalachee Bay where Spring Creek enters Oyster Bay. The site is located along an S-shaped reef 300 meters south of channel markers 31 and 32, and northwest to southwest of channel markers 29 and 30.

Sediments were adjacent to the oyster reef and were composed of fine-grained black silt in pockets over shell and shell hash.

SAMPLING METHODS - Oysters were collected by hand and sediments with a box corer.

SITE - Apalachicola Bay, Cat Point Bar, FL

SITE CODE - APCP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

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SITE CENTER COORDINATES - 29° 43.45'N
84° 53.05'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHARTS - 11404 and 11402 (both NAD 1927)

SITE DESCRIPTION - The site is located at Cat Point and can be walked to from the beach at low tide. At high tide, the site is accessible by boat. To reach the site drive south on road G1A to the toll booth. Turn left on the dirt road and proceed east to East Point Beach. Park and walk to East Point Beach where oysters can be picked up by hand at low tide. If the tide is high a boat can be launched at one of the ramps on Highway 30 which is east of the site, and the oysters can be tonged. A boat may also be launched from the ramp in the boat basin at the town of East Point (two blocks south of Highway 98). It is a short ride to the tonging site on a large reef that parallels the telephone poles crossing the bay. Dredges are not permitted in Apalachicola Bay.

Sediments were located just off the reef (east and northeast).

SAMPLING METHOD - Sediments were taken using a box corer and oysters were collected with tongs and by hand.

SITE - Apalachicola Bay, Dry Bar, FL

SITE CODE - APDB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 40.45'N
85° 04.40'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHARTS - 11402 and 11404 (both NAD 1927)

SITE DESCRIPTION - The site is accessed by a 30 minute boat ride originating at the ramp in Apalachicola near the southwest end of the John Gorrie Memorial Bridge. Proceed west along the inside channel to the first channel going south into Apalachicola Bay. Then run a compass course (bearing 250 degrees) to the northeast end of Saint Vincent Island at Saint Vincent Point.

The site is located on the northeast corner of St. Vincent Island at St. Vincent Point. Oysters are located north of the point on subtidal shell and sand bottom. Collections were made by hand and by tonging.

Sediments were collected within 30 meters of the oyster site. An alternate sediment collection was made at the mouth of the Apalachicola River, near St. Vincent island.

SAMPLING METHOD - Sediments were collected with a box corer, and oysters were collected with tongs and by hand.

FLORIDA SITES

SITE - Panama City, Municipal Pier, FL

SITE CODE - PCMP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 09.00'N
85° 39.80'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 11390 and 11391 (both NAD 1927)

SITE DESCRIPTION - This site is located at the Bay City Marina in Panama City. A boat is necessary to collect at this site and can be launched at the public boat ramp. All three stations are located at the marina.

Oyster samples were collected from both the inside and outside of the breakwater on the east side of the marina. Oysters are numerous at the surface and to 0.5 meters below the normal high tide line.

SAMPLING METHODS - Sediments were collected with a box corer, and oysters were collected with tongs and by hand.

SITE - St. Andrew Bay, Watson Bayou, FL

SITE CODE - SAWB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 08.53'N
85° 37.92'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHARTS - 11389 and 11391 (both NAD 1927)

SITE DESCRIPTION - The site is located in Watson Bayou, which is east of the Bay City Marina in Panama City. After collecting at the Municipal Pier site travel east down the Intracoastal Waterway to Watson Bayou. The site is at the first point after entering the bayou.

The oysters are attached to rocks on a point of land identified by a former shipyard, just west of the dockage for ships and boats on the channel that leads up to the paper mill. Oysters were intertidal. All samples were taken from the rock rubble along the shore on the first point on the east side of Watson Bayou.

Sediments are sampled just south of the small bridge at the paper mill, and slightly upstream from the paper mill near the upper end of the slough.

SAMPLING METHOD - Oysters are collected by hand and sediments are collected using a box corer.

FLORIDA SITES

SITE - Panama City, Little Oyster Bar Point, FL

SITE CODE - PCLO

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 15.19'N (Bivalves)
85° 40.95'W

WATER DEPTH - 0.3 meter

30° 14.27'N (Sediments)
85° 42.69'W

LOCATED ON NOS CHART - 11390 (NAD 1927)

SITE DESCRIPTION - Access to the site is via boat launched at the public ramp at Richard Simpson Park. The park is located at the east end of the Hathaway Bridge (Highway 98) on the north side where it crosses West Bay. Cross the bridge, then turn north on Moody Avenue to the old highway, then turn left. The ramps are on the right.

The site is located at Little Oyster Bar Point in North Bay. The site is on the edge of the U.S. Air Force Petroleum Depot. The oyster and sediment sites are separated, across the bay, by a distance of about 2 miles. The sediment site is located near the mouth of Mud Bayou and east of West Bay Point.

Oysters were taken from the concrete bases of the high-voltage transmission towers crossing the bay at Little Oyster Bar Point.

Sediments were collected at the mouth of Mud Bayou.

SAMPLING METHODS - Oysters were collected by hand and sediments with a box corer.

SITE - Choctawhatchee Bay, Off Santa Rosa, FL

SITE CODE - CBSR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 24.35'N (1986-1987)
86° 12.75'W

WATER DEPTH - 3 meters

30° 24.78'N (1988-1990)
86° 12.25'W

LOCATED ON NOS CHART - 11385 (NAD 1927; August 8, 1987)

SITE DESCRIPTION - The site is located in the eastern portion of Choctawhatchee Bay near U.S. Highway 331. Access to the site is by boat launched from ramps on either side of the south end of the bridge crossing Choctawhatchee Bay, or at the Yodum's Grocery ramp north of the drawbridge. From the drawbridge, proceed west to channel marker 34 of the Intracoastal Waterway.

FLORIDA SITES

Two distinct locations have been sampled for this site. The 1986 oysters were tonged south of channel marker 34. The oyster reefs were extensive and the outer margin of the reef was marked with four wooden pilings. However, in 1987, no oysters could be found in the reported sampling area and the site was slightly moved toward the shoreline where a small bayou enters the bay (southeast from a large white house). Oysters were attached to rocks and a wooden bulwarks around a large tree. Oysters were small and not overly abundant. In 1988 and 1989, the site was relocated to a commercially fished reef near channel marker 40 (bearing 062 degrees to the marker). The reef runs northeast-southwest (260/080 degrees) and is marked by poles and signs noting "Danger, submerged oyster reefs." This reef was in 3 meters of water and was sampled by tonging.

The sediment site has been co-located with the oyster site each year.

SAMPLING METHOD - Sediments were sampled with a box corer, and oysters were sampled by hand and with tongs.

SITE - Choctawhatchee Bay, Postil Point, FL

SITE CODE - CBPP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 28.85'N
86° 28.73'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 11388 and 11385 (both NAD 1927)

SITE DESCRIPTION - The site is reached by automobile with access through Eglin Air Force Base. Enter Eglin AFB on Highway 85. Stop at the base visitor center to obtain a pass, and ask the guard to direct you to the family camping area at Postil Point.

The site is located on the west bank at the entrance to Boggy Bayou, which is on the north side of Choctawhatchee Bay. Oysters were collected by hand from along the shoreline from the entrance into Postil Lake north to Postil Point.

Sediments were collected in Choctawhatchee Bay out from Postil Point.

SAMPLING METHOD - Oysters were sampled by hand and sediments with a Teflon scoop.

FLORIDA SITES

SITE - Choctawhatchee Bay, Joe's Bayou, FL

SITE CODE - CBJB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 24.62'N
86° 29.45'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 11385 and 11388 (both NAD 1927)

SITE DESCRIPTION - The site can be walked to and is reached by driving up Beach Drive to the boat ramp. The site is located just south of the boat ramp.

The site is on the south shore of Choctawhatchee Bay, at the mouth of Joe's Bayou where it enters the bay. Collections were taken from the area directly south of the boat ramp. The oysters are intertidal and accessible by wading from shore. More oysters are available further up the bayou along the shoreline structures.

Suitable sediments were located in the southern arm of the upper part of Joe's Bayou in 1.5 meters of water.

SAMPLING METHODS - Oysters were sampled by hand and sediments were sampled with a box corer.

SITE - Pensacola Bay, Sabine Point, FL

SITE CODE - PBSP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 20.80'N (Bivalve) **WATER DEPTH** - 0.4 meter
87° 09.10'W

30° 21.03'N (Sediment)
87° 09.35'W

LOCATED ON NOS CHARTS - 11378 and 11382 (both NAD 1927)

SITE DESCRIPTION - Access to the site is by boat which can be launched at the public ramp in Gulf Breeze. To reach the site, cross the Pensacola Bay Bridge on Highway 98, go through Gulf Breeze to Shoreline Drive, then turn right and proceed to the Shoreline Drive Park. Turn left and continue to the boat ramp on the north side of Santa Rosa Sound.

This site is located in Santa Rosa Sound under the Highway 399 bridge, on the south side of the Intracoastal Waterway. Collections from this site are easiest at low tide and in calm weather since

FLORIDA SITES

the oysters are attached to the concrete piers. Oysters are collected by hand from the concrete pilings of the old bridge in the intertidal zone.

Sediments were collected along the shoreline approximately 0.5 nautical miles to the northeast.

SAMPLING METHODS - A boat is necessary for bivalve collection, which is by hand. Sediment collection was made with a hand held box corer.

SITE - Pensacola Bay, Indian Bayou, FL

SITE CODE - PBIB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 31.35'N (1986)
87° 06.38'W

WATER DEPTH - 1 meter

30° 31.00'N (1987-1989)
87° 06.70'W

WATER DEPTH - 3 meters

LOCATED ON NOS CHARTS - 11382 and 11378 (both NAD 1927)

SITE DESCRIPTION - Access to the site is via I-10 onto Avalon Boulevard Drive to the Indian Bay Marina. Turn right on Connido Street. Proceed to a dirt road intersection, turn left and proceed to a deadend at Indian Bayou. Launch a boat at the small ramp and proceed down Indian Bayou to its mouth. In 1989, the mouth of Indian Bayou had silted in so the launch point was moved. To reach the boat ramp, exit I-10 at Avalon, then go north to SR 281, turn left and go to the stop sign, turn left again and follow the dirt road until it ends at the ramp. To reach the site, follow the marked channel out to Escambia Bay and then turn south, going under the bridge to the reef. The reef is located about 1 mile south of the bridge on a bearing of 140 degrees. Run time to the site is approximately 20 minutes. Oysters were found on a subtidal reef west of the entrance to Indian Bayou. The site is marked by several pilings, one of which has an "Oyster Reef" sign. The site was located between the poles marked "Danger, Oyster Reef."

SAMPLING METHODS - Oysters are sampled by hand and with tongs; sediments are taken with a Teflon scoop.

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SITE - Pensacola Bay, Public Harbor, FL

SITE CODE - PBPH

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 24.63'N
87° 11.42'W

WATER DEPTH - 0.4 meter

LOCATED ON NOS CHARTS - 11378 and 11382 (both NAD 1927)

SITE DESCRIPTION - Access to the site is by boat, which can be launched at the public ramp northeast of the Highway 98 bridge and the Pensacola Bay Pier. The site is located under the Pensacola Fishing Pier, which is the old Highway 98 bridge. The pier is on the east side of the new bridge. Collections from this site are easiest at low tide and in calm weather since the oysters are collected by hand from the boat, which must be tied to the pier. Oysters are collected by hand from the concrete pilings of the old bridge in the intertidal zone. All oysters collected were intertidal.

SAMPLING METHODS - A boat is necessary for bivalve collection, which is by hand. Sediments are taken with a box corer.

FLORIDA SITES

Benthic Surveillance

SITE - Charlotte Harbor, Cape Haze, FL

SITE CODE - LOTCH

TARGET SPECIES - *Leiostomus xanthurus* (spot)

NOMINAL SITE CENTER - 26° 49.8'N
82° 06.3'W

WATER DEPTH AT
NOMINAL CENTER - 6 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	26° 45.6'	82° 09.4'
1985	26° 45.4'	82° 09.3'
1986	26° 45.6'	82° 10.0'
1988	26° 45.7'	82° 09.6'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	26° 45.7'	82° 09.3'
1984	2	26° 49.8'	82° 06.3'
1984	3	26° 52.3'	82° 07.7'
1985	1	26° 45.7'	82° 09.3'
1985	2	26° 49.8'	82° 06.3'
1985	3	26° 52.3'	82° 07.7'
1986	1	26° 45.9'	82° 09.2'
1986	2	26° 50.0'	82° 06.2'
1986	3	26° 52.6'	82° 07.5'
1988	1	26° 45.8'	82° 09.4'
1988	2	26° 49.7'	82° 06.4'
1988	3	26° 52.3'	82° 07.7'

LOCATED ON NOS CHART - 11426 (NAD 1927; March 9, 1985)

SITE DESCRIPTION - The site center for Charlotte Harbor is north of Cape Haze, on the west side of the harbor, 3.4 nautical miles north of the Fl G 4sec 20ft " 5" buoy, 5.8 nautical miles south of the R " 8" marker, and 4.6 nautical miles west of Fines Key.

FLORIDA SITES

SITE - Tampa Bay, Northern Tampa Bay, FL

SITE CODE - TAMTB

TARGET SPECIES - *Arius felis* (hardhead catfish)

NOMINAL SITE CENTER - 27° 46.8'N
82° 34.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 6 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1989	27° 49.2'	82° 34.3'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	27° 47.0'	82° 32.5'
1984	2	27° 46.1'	82° 35.5'
1984	3	27° 47.0'	82° 35.9'
1985	1	27° 47.0'	82° 32.5'
1985	2	27° 46.1'	82° 35.5'
1985	3	27° 47.0'	82° 35.9'
1989	1	27° 47.0'	82° 32.3'
1989	2	27° 46.1'	82° 35.5'
1989	3	27° 47.0'	82° 36.0'

LOCATED ON NOS CHART - 11413 (NAD 1927; April 14, 1984)

SITE DESCRIPTION - The site center is located south of the Cut G Channel and east of Coffeepot Bayou. It is 0.6 nautical miles east of south of the "5G"Qk Fl G BELL buoy on the south side of the Cut G Channel, and 2.26 nautical miles west of the "5F"Qk Fl G BELL buoy on the west side of the Cut " F"Channel.

SITE - Apalachicola Bay, Saint George Island, FL

SITE CODE - APASG

TARGET SPECIES - *Leiostomus xanthurus* (spot) (1984)
Micropogonias undulatus (Atlantic croaker) (1984-1986, 1988, 1990)

NOMINAL SITE CENTER - 29° 38.9'N
84° 58.4'W

**WATER DEPTH AT
NOMINAL CENTER** - 3 meters

FLORIDA SITES

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	29° 37.4'	84° 58.5'
1985	29° 37.5'	85° 04.0'
1986	29° 37.5'	84° 58.3'
1988	29° 37.3'	85° 04.1'
1990	29° 36.7'	85° 04.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	29° 37.8'	84° 58.1'
1984	2	29° 38.3'	84° 58.5'
1984	3	29° 39.9'	84° 58.5'
1985	1	29° 37.8'	84° 58.1'
1985	2	29° 38.3'	84° 58.5'
1985	3	29° 39.9'	84° 58.5'
1986	1	29° 37.8'	84° 58.1'
1986	2	29° 38.3'	84° 58.5'
1986	3	29° 39.9'	84° 58.5'
1988	1	29° 37.7'	84° 58.1'
1988	2	29° 38.2'	84° 58.4'
1988	3	29° 39.9'	84° 58.4'
1990	1	29° 37.4'	84° 58.1'
1990	2	29° 37.8'	84° 58.4'
1990	3	29° 38.3'	84° 58.5'

LOCATED ON NOS CHART - 11404 (NAD 1927; September 1, 1984)

SITE DESCRIPTION - This site center is located northwest of Government Cut, which separates Little Saint George Island and Saint George Island. It is south of where the Intracoastal Waterway turns 90 degrees to go north into Apalachicola Bay. The center is 0.1 nautical miles northwest of the Iso G 6s 36ft buoy that marks the entrance to the Government Cut, and 0.6 nautical miles southwest of the C " 77" marker on the south side of the Intracoastal Waterway.

SITE - Saint Andrew Bay, Military Point, FL

SITE CODE - ANDMP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 07.6'N
85° 38.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 10 meters

FLORIDA SITES

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1989	30° 07.5'	85° 38.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	1	30° 07.8'	85° 38.3'
1989	2	30° 07.7'	85° 37.6'
1989	3	30° 07.3'	85° 38.4'

LOCATED ON NOS CHART - 11390 (NAD 1927; July 16, 1983)

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	27° 47.0'	82° 32.5'
1984	2	27° 46.1'	82° 35.5'
1984	3	27° 47.0'	82° 35.9'
1985	1	27° 47.0'	82° 32.5'
1985	2	27° 46.1'	82° 35.5'
1985	3	27° 47.0'	82° 35.9'
1989	1	27° 47.0'	82° 32.3'
1989	2	27° 46.1'	82° 35.5'
1989	3	27° 47.0'	82° 36.0'

LOCATED ON NOS CHART - 11413 (NAD 1927; July 16, 1983)

SITE DESCRIPTION - This site is located in Saint Andrew Bay, south of Panama City and Watson Bayou. It is located 0.6 nautical miles west of the Qk Fl R 17ft "28" marker on Military Point, and 0.4 nautical miles southwest of the "27" Fl G 2.5sec 17ft marker near Bay Harbor.

SITE - Choctawhatchee Bay, Choctawhatchee Bay, FL **SITE CODE** - COCCB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 26.4'N
86° 20.3'W

**WATER DEPTH AT
NOMINAL CENTER** - 6.1 meters

FLORIDA SITES

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1989	30° 25.0'	86° 28.1'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	1	30° 26.5'	86° 19.5'
1989	2	30° 26.4'	86° 20.3'
1989	3	30° 26.4'	86° 21.1'

LOCATED ON NOS CHART - 11385 (NAD 1927, August 8, 1987)

SITE DESCRIPTION - This site is south of Grassy Cove, north of Horseshoe Bayou, and southeast of Big Hammock Point in the center of the Bay.

SITE - Choctawhatchee Bay, Destin Harbor, FL

SITE CODE - COCDH

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 23.4'N
86° 29.8'W

**WATER DEPTH AT
NOMINAL CENTER** - 5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1989	30° 23.5'	86° 30.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	1	30° 23.3'	86° 29.5'
1989	2	30° 23.5'	86° 29.8'
1989	3	30° 23.5'	86° 30.0'

FLORIDA SITES

LOCATED ON NOS CHART - 11385 (NAD 1927)

SITE DESCRIPTION - This site is located on the east end of Destin Harbor, near the Choctawhatchee Bay Entrance.

SITE - Pensacola Bay, Pensacola Bay, FL

SITE CODE - PENPB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1985, 1986, 1987, 1989)
Leiostomus xanthurus (spot) (1985)

NOMINAL SITE CENTER - 30° 25.5'N
 87° 11.2'W

**WATER DEPTH AT
 NOMINAL CENTER** - 7 meters

CENTER OF FISHING ACTIVITIES:

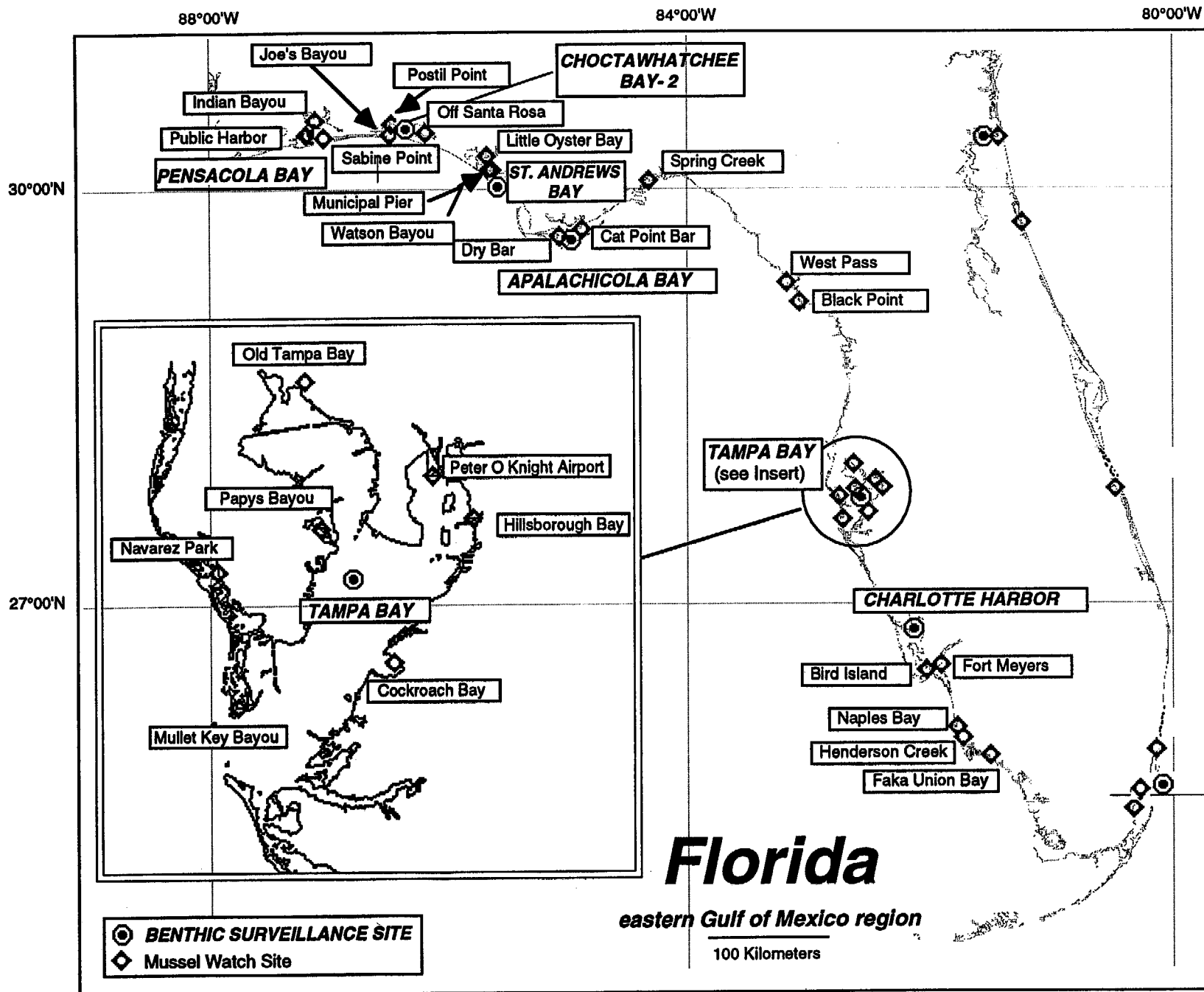
SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1985	30° 29.8'	87° 08.3'
1986	30° 22.6'	87° 09.0'
1987	30° 22.6'	87° 09.0'
1989	30° 20.4'	87° 10.4'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	1	30° 22.4'	87° 14.6'
1985	2	30° 25.5'	87° 09.3'
1985	3	30° 33.0'	87° 09.5'
1986	1	30° 22.4'	87° 14.7'
1986	2	30° 25.4'	87° 09.3'
1986	3	30° 32.9'	87° 09.5'
1987	1	30° 22.3'	87° 14.7'
1987	2	30° 25.5'	87° 09.3'
1987	3	30° 32.9'	87° 09.5'
1989	1	30° 22.4'	87° 14.7'
1989	2	30° 25.2'	87° 09.3'
1989	3	30° 33.0'	87° 09.5'

LOCATED ON NOS CHART - 11378 (NAD 1927; November 21, 1987)

SITE DESCRIPTION - The center of activities for this sampling site is located in Bayou Texzar which is on the north side of Pensacola Bay. It is east of Pensacola and west of Emanuel Point.



ALABAMA SITES

Mussel Watch

SITE - Mobile Bay, Dog River, AL

SITE CODE - MBDR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 35.50'N
88° 02.72'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHART - 11376 (NAD 1927; May 30, 1987)

SITE DESCRIPTION - The launch point is at Dog River, which is south of Interstate 10 on the Dauphin Island Parkway. Launch a boat at the Beach Comber, proceed out the Dog River channel to The Mobil Ship Channel, and go north to channel marker green 69. Turn into the short channel west of channel marker 69 and proceed to channel marker 5. The site is located approximately 75 meters on a bearing of 280 degrees from channel marker 5. The site is on a reef that runs west-southwest from channel marker 5 for approximately 300 meters. Oysters were located in 1.5 meters of water on small, scattered reefs with oysters, shell and clams.

Sediment samples were taken 50 meters north of each oyster station.

SAMPLING METHODS - Oysters were sampled using tongs and sediments were taken with a box corer.

SITE - Mobile Bay, Hollingers Island Channel, AL

SITE CODE - MBHI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 33.80'N
88° 04.50'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 11376 (NAD 1927; May 30, 1987)

SITE DESCRIPTION - The launch point is at Dog River, which is south of Interstate 10 on the Dauphin Island Parkway. Launch at the Beach Comber and proceed out the Dog River channel to channel marker 10. Turn south and start poling for oysters. Oysters were located in 2 meters of water on small, scattered reefs with oysters, shell and clams. In 1989, the oysters were collected by tonging on a small, sparsely populated reef about 100 meters southwest of channel marker 9, an equal distance southeast from a four legged wooden stand, and just east of the Dog River marina.

Sediment stations are co-located with each oyster station and must be located by poling.

SAMPLING METHODS - Oysters were collected using tongs and sediments were collected with a box corer.

ALABAMA SITES

SITE - Mobile Bay, Cedar Point Reef, AL

SITE CODE - MBCP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 18.70'N
88° 08.00'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 11376 and 11378 (both NAD 1927)

SITE DESCRIPTION - A boat can be launched at the small bridge just north of the Dauphin Island causeway bridge. The site is located directly east of the middle part of Cedar Point. At low tide the site can be reached by walking across the shallow sandbar on the north end of the reef. By boat the site is 10 - 15 minutes from the launch site.

Sediments were collected adjacent to the bridge.

SAMPLING METHODS - Sediments were taken using a box corer, and oysters were collected with tongs and by hand.

ALABAMA SITES

Benthic Surveillance

SITE - Mobile Bay, North Point, AL

SITE CODE - MOBNP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 17.8'N
88° 04.8'W

WATER DEPTH AT
NOMINAL CENTER - 4 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	30° 17.7'	88° 06.0'
1985	30° 17.0'	88° 08.3'
1986	30° 18.9'	88° 01.8'
1988	30° 17.7'	88° 01.0'
1990	30° 17.8'	88° 02.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	30° 16.6'	88° 04.4'
1984	2	30° 17.8'	88° 05.9'
1984	3	30° 19.0'	88° 04.4'
1985	1	30° 16.6'	88° 04.4'
1985	2	30° 17.9'	88° 05.9'
1985	3	30° 19.0'	88° 04.4'
1986	1	30° 16.5'	88° 04.4'
1986	2	30° 17.7'	88° 05.9'
1986	3	30° 19.0'	88° 04.4'
1988	1	30° 16.5'	88° 04.4'
1988	2	30° 17.7'	88° 05.9'
1988	3	30° 19.0'	88° 04.3'
1990	1	30° 18.0'	88° 06.3'
1990	2	30° 18.1'	88° 05.3'
1990	3	30° 18.2'	88° 04.3'

LOCATED ON NOS CHART - 11378 (NAD 1927; November 21, 1987)

SITE DESCRIPTION - The center for this site is located in Mobile Bay west of Mobile Bay Channel, north of Fort Gaines, and southeast of Cedar Point. It is located 0.8 nautical miles north-northeast of Fl R 4sec 4m "2," and 2.4 nautical miles west-northwest of the Art "25" Fl G 2.54 sec on the west side of the Mobile Bay Channel.

ALABAMA SITES

SITE - Mobile Bay, Mobile River, AL

SITE CODE - MOBMR

TARGET SPECIES - No fish were collected at this site.

NOMINAL SITE CENTER - 30° 38.2'N
87° 59.2'W

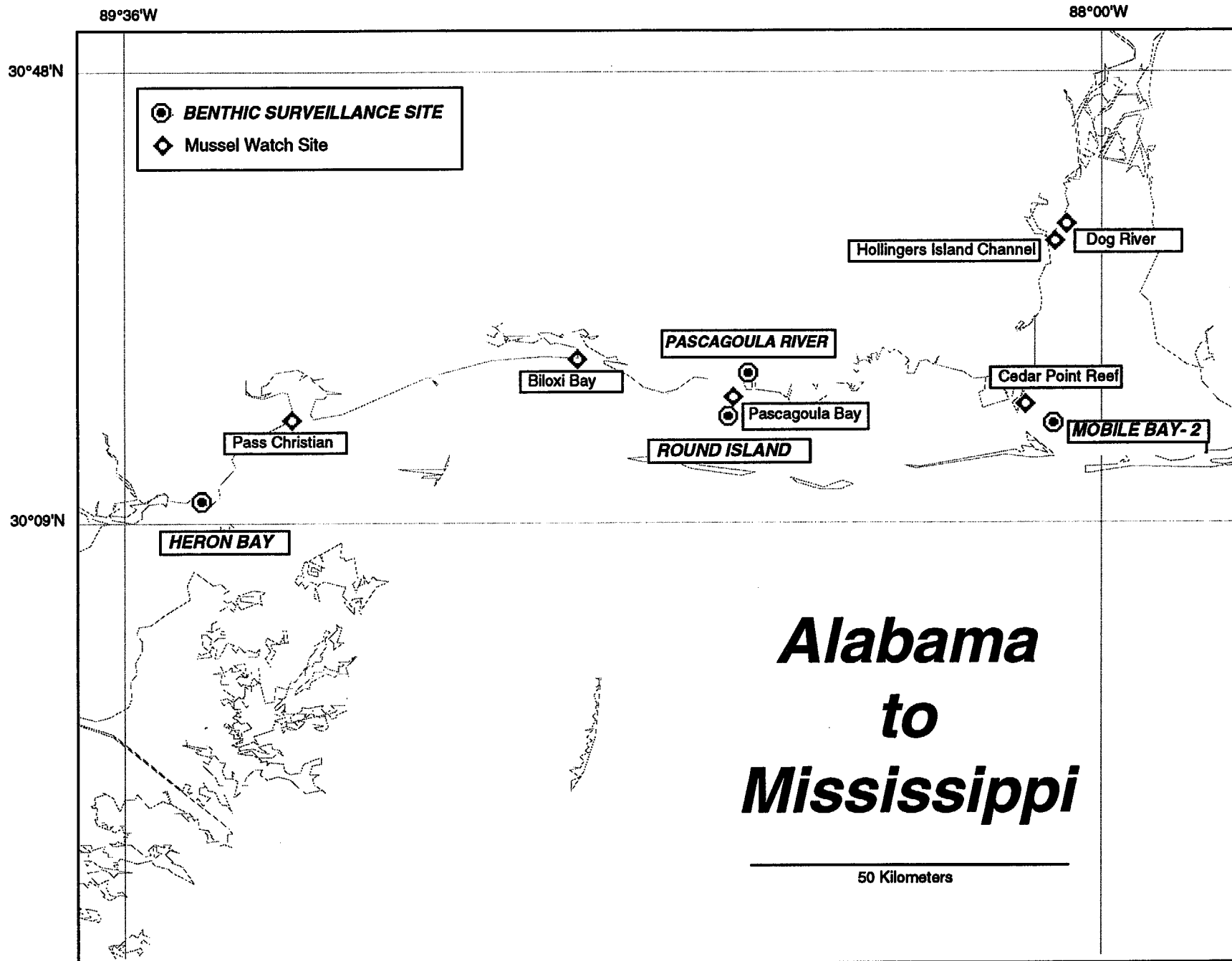
**WATER DEPTH AT
NOMINAL CENTER** - 5 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	1	30° 37.9'	88° 00.8'
1990	2	30° 38.5'	87° 59.1'
1990	3	30° 38.2'	87° 57.7'

LOCATED ON NOS CHART - 11376 (NAD 1927; May 30, 1987)

SITE DESCRIPTION - This site is located on the north end of Mobile Bay, southeast of the mouths of both the Mobile and Apalachee Rivers, and south of Chacaloochee Bay. This site is located near the "numerous scattered oyster beds" marked on the chart.



MISSISSIPPI SITES

Mussel Watch

SITE - Mississippi Sound, Pascagoula Bay, MS

SITE CODE - MSPB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 20.03'N
88° 36.10'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHART - 11374 (NAD 1927; June 20, 1987)

SITE DESCRIPTION - To reach the boat ramp on the Pascagoula River, turn off Highway 90 onto Beach Road going south. When the road dead-ends at the beach, turn right and drive west to the end of the road. Launch the boat at the public ramp and proceed west to red marker 4. Run time to the site is less than 20 minutes. The site is located west of the new causeway going to the Naval Base near the mouth of the West Pascagoula River. Oysters were found by poling the subtidal reef. Soft mud sediments were found adjacent to the reef at each collection point.

Sediments are collected within 75-100 meters north of the site.

SAMPLING METHOD - Sediments were collected with a box corer, and oysters were collected by hand and with tongs.

SITE - Mississippi Sound, Biloxi Bay, MS

SITE CODE - MSBB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 23.55'N
88° 51.45'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 11373 and 11372 (both NAD 1927)

SITE DESCRIPTION - Access to the site is via automobile, park at the Marine Education Center on Highway 90 at the Biloxi-Ocean Springs bridge. The sampling area is along the shoreline in intertidal waters. Oysters were taken from the concrete bulkhead, rocks, and debris in the water.

Sediments were taken offshore from the three oyster sampling locations, with the boat being launched at the city marina approximately 0.3 nautical miles east of the Marine Education Center.

SAMPLING METHOD - Oysters were collected by hand and sediments with a box corer.

MISSISSIPPI SITES

SITE - Mississippi Sound, Pass Christian, MS

SITE CODE - MSPC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 17.75'N (1986)
89° 19.60'W

WATER DEPTH - 0 meters

30° 18.12'N (1987-1990)
89° 19.62'W

LOCATED ON NOS CHARTS - 11372 and 11373 (both NAD 1927)

SITE DESCRIPTION - The site can be accessed by taking the first exit on the west side of the bridge at Highway 90 and following the road south along the shoreline to Veterans Pier. A boat ramp is located on the south side of the jetty/pier for sediment sampling. In 1986 oysters were tonged from the open water offshore from Bay Saint Louis. The original reef location off Pass Christian was dead in 1987 and the site was moved shoreward to the Veterans Pier. At the pier oysters were attached to rocks and on the muddy sand bottom. Accessibility was best at low tide.

Sediment stations were co-located with each oyster station. Silty-sand sediments were collected along the shoreline and can be reached by wading.

SAMPLING METHOD - Oysters were collected with tongs and by hand. Sediments were collected with a box corer and a Teflon scoop.

MISSISSIPPI SITES

Benthic Surveillance

SITE - Pascagoula River, Pascagoula River, MS

SITE CODE - PASPR

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 22.8'N
88° 34.1'W

WATER DEPTH AT
NOMINAL CENTER - 7 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	30° 23.0'	88° 34.1'
1989	30° 23.1'	88° 34.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	30° 23.1'	88° 34.0'
1987	2	30° 22.8'	88° 34.1'
1987	3	30° 22.4'	88° 33.8'
1989	1	30° 23.3'	88° 33.9'
1989	2	30° 22.9'	88° 34.0'
1989	3	30° 22.4'	88° 33.7'
1989	4	30° 21.4'	88° 33.9'

LOCATED ON NOS CHART - 11374 (NAD 1927; June 20, 1987)

SITE DESCRIPTION - The site center is located in the Singing River east of Marsh Lake, west of Krebs Lake, and south of the Pascagoula River.

SITE - Round Island, Round Island, MS

SITE CODE - ROURI

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1985)
Leiostomus xanthurus (spot) (1984)

NOMINAL SITE CENTER - 30° 18.4'N
88° 36.6'W

WATER DEPTH AT
NOMINAL CENTER - 2 meters

MISSISSIPPI SITES

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	30° 19.3'	88° 36.7'
1985	30° 23.2'	88° 33.9'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	30° 17.7'	88° 35.8'
1984	2	30° 18.3'	88° 36.8'
1984	3	30° 19.3'	88° 37.0'
1985	1A*	30° 17.7'	88° 35.8'
1985	1B*	30° 17.7'	88° 35.8'
1985	2A*	30° 18.3'	88° 36.8'
1985	2B*	30° 18.3'	88° 36.8'
1985	3A*	30° 19.3'	88° 37.0'
1985	3B*	30° 19.3'	88° 37.0'
1987	1	30° 17.6'	88° 35.7'
1987	2	30° 18.3'	88° 36.4'
1987	3	30° 19.3'	88° 36.5'

LOCATED ON NOS CHART - 11374 (NAD 1927; June 20, 1987)

SITE DESCRIPTION - The center of activities for the Round Island site is located in the Mississippi Sound, north of Horn Island and south of Pascagoula Bay. The site center is 0.9 nautical miles northeast of the northern tip of Round Island, 1 nautical mile south of the FIR 4sec 30ft 4m " 2" buoy, and 2.2 nautical miles northeast of the FIG 2.5 sec 17ft 5m " 5" marker.

* Sampling occurred over a one-month interval: A - September 4-5, 1985; B - October 5, 1985.

SITE - Heron Bay, Heron Bay, MS

SITE CODE - HERHB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 30° 11.0'N
89° 28.5'W

WATER DEPTH AT
NOMINAL CENTER - 1 meter

MISSISSIPPI SITES

CENTER OF FISHING ACTIVITIES:

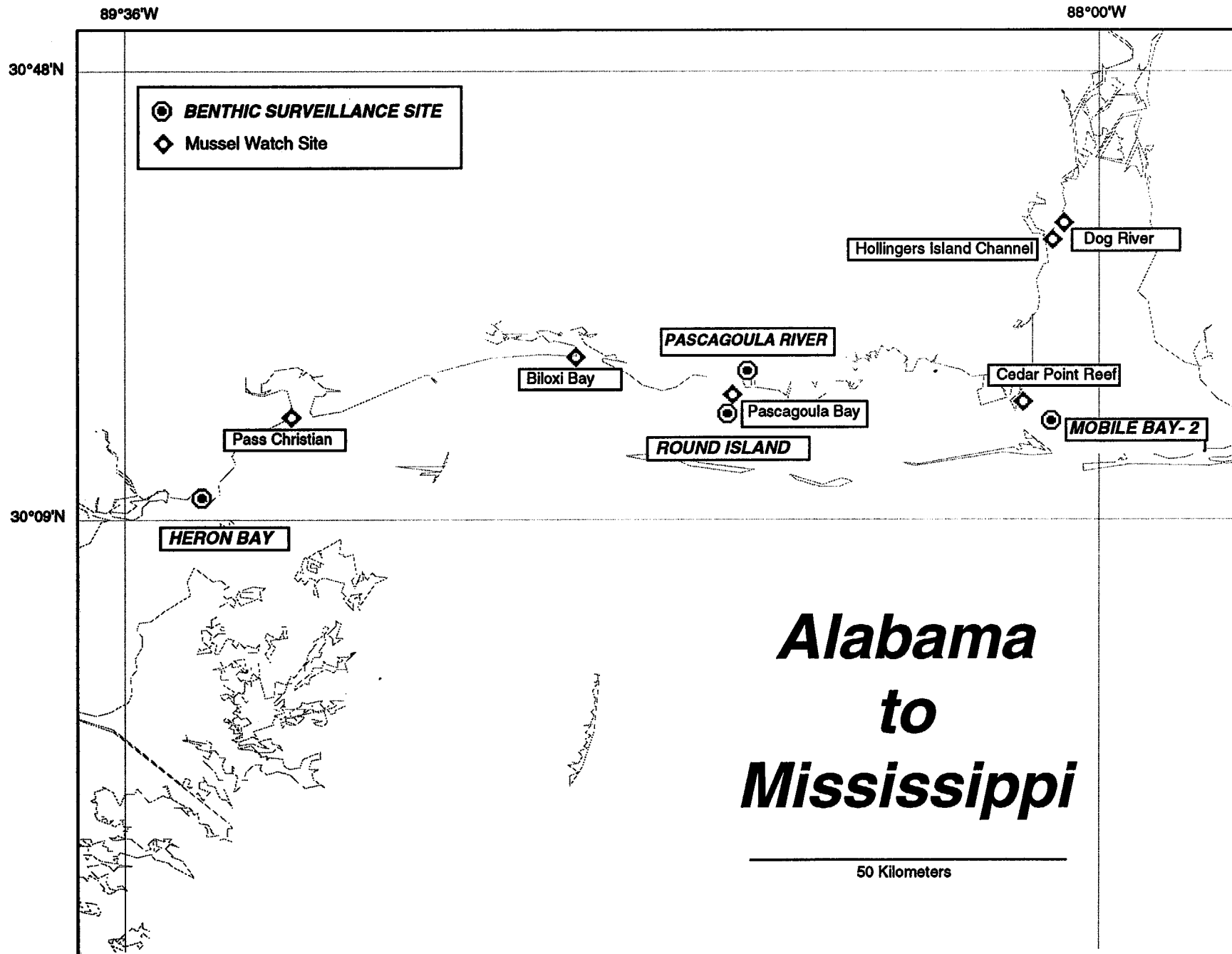
SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	30° 11.3'	89° 28.8'
1985	30° 11.8'	89° 30.0'
1986	30° 11.8'	89° 30.0'
1988	30° 12.1'	89° 10.7'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	1	30° 11.1'	89° 27.9'
1985	2	30° 11.2'	89° 28.9'
1985	3	30° 10.6'	89° 28.8'
1986	1	30° 11.1'	89° 27.9'
1986	2	30° 11.2'	89° 28.9'
1986	3	30° 10.6'	89° 28.8'
1988	1	30° 11.4'	89° 27.9'
1988	2	30° 11.2'	89° 29.0'
1988	3	30° 11.5'	89° 28.8'

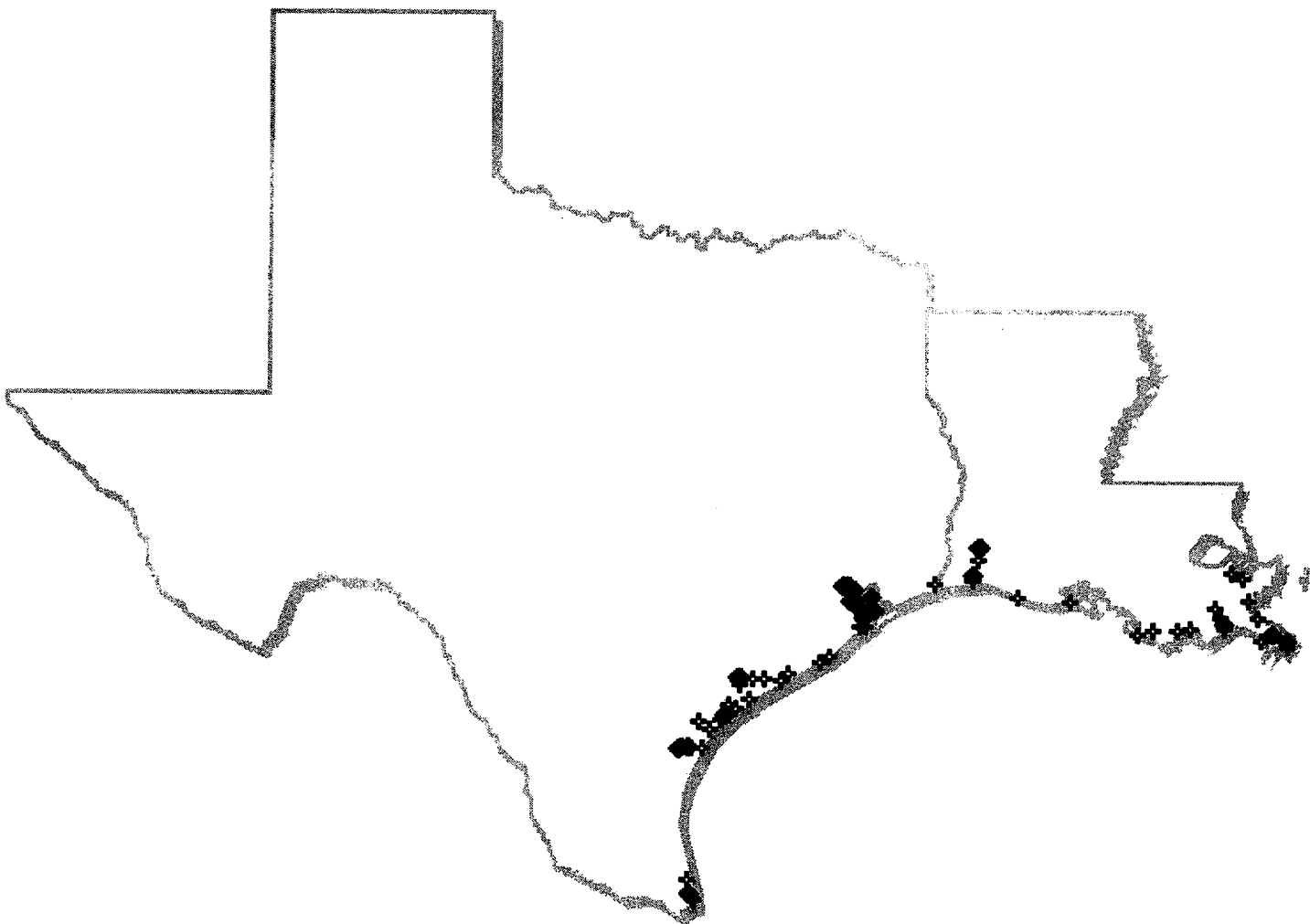
LOCATED ON NOS CHART - 11367 (NAD 1927; June 13, 1987)

SITE DESCRIPTION - The site center is located in the middle of Heron Bay, east of Brush Bayou, south of Heron Bay Bayou, and west of Bayou Toncre. Heron Bay Point is 0.5 miles southeast of the site center. The center is 2.2 nautical miles north of Grassy Island, and 1.6 nautical miles northeast of the GC " 5" marker.



NATIONAL STATUS & TRENDS PROGRAM

Western Gulf of Mexico



- ✚ Mussel Watch Project
- ◆ Benthic Surveillance Project

LOUISIANA SITES

Mussel Watch

SITE - Mississippi River, Pass A Loutre, LA

SITE CODE - MRPL

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 04.87'N
89° 05.53'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11361 (NAD 1927)

SITE DESCRIPTION - The departure point for this site is from the Venice Marina. From the boat basin head upstream to the main fork of the Mississippi River, then proceed downstream to Head of Passes. At this point, take the east fork, holding to the south shore to avoid the large sandbar at the entrance to Pass a Loutre. Proceed east to the first cut to the south, and proceed to the Louisiana Fish and Wildlife Headquarters located south of the entrance to Johnson Pass. Travel back upstream to Loomis Pass, turn to the southeast into the pass, and proceed downstream entering Cognevich Pass and on into the Gulf of Mexico. At this point, turn north to the mouth of Redfish Bay.

The site is located at the extreme southeast edge of Redfish Bay just north of the last small island. Prominent landmarks are the Lighthouse (240°) at Port Eads in South Pass and the blue Exxon platform (350°). Louisiana Fish and Wildlife personnel provided guidance to the site. No attempt should be made to travel to this site except in calm weather.

The sediment site is adjacent to the oyster site.

SAMPLING METHODS - Oysters are collected with tongs or a dredge; sediments are collected with a box corer.

SITE - Mississippi River, Tiger Pass, LA

SITE CODE - MRTP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 08.69'N
89° 25.67'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 11361 (NAD 1927, April 4, 1987)

SITE DESCRIPTION - Access to the site is by boat. From the boat launch at the Venice Marina proceed down Tiger Pass; this takes a half-hour to an hour depending on weather conditions. The mouth of Tiger Pass is bordered by a jetty on both sides; proceed past the jetty on the north side

LOUISIANA SITES

to channel marker 7, then turn north and go back to the shoreline. The site is directly north of the jetty and channel marker 9, on the southwest shoreline of a small, smooth-cordgrass island. The site is located near a telephone pole at the edge of the marsh.

Sediments are collected 20-50 meters offshore of the oyster stations.

SAMPLING METHOD - Oysters are collected by hand and sediments are collected with a box corer.

SITE - Breton Sound, Sable Island, LA

SITE CODE - BSSI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 24.21'N
89° 29.10'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11364 (NAD 1927)

SITE DESCRIPTION - A boat may be launched at the Venice Marina. There are several ways to reach the site but the easiest is to go up the Mississippi River to the Ostrica Canal Locks and then out the private channel across Quarantine Bay to Sable Island. Run time to the site is about an hour.

The site surrounds Sable Island. Oyster reefs were ubiquitous around the island. In 1991 a new launch site was used at Delta Marine in Empire. It is necessary to go through the Empire Lock, then downriver to the Ostrica Lock, but the run time is much shorter than coming upriver.

Sediments were available near the shore on the south side of the island.

SAMPLING METHOD - Oysters are collected by hand and with a dredge, sediments are collected with a box corer.

LOUISIANA SITES

SITE - Breton Sound, Bay Gardene, LA

SITE CODE - BSBG

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 35.90'N
89° 37.25'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 11364 (NAD 1927)

SITE DESCRIPTION - The site is accessed by boat launched at Pointe a la Hache. Proceed from the marina southeast down the Back Levee Canal to Lower Grand Bayou, then east along the bayou to Battle Ground Bay. In Battle Ground Bay go generally east, paralleling the shore to Tripple Pass, then proceed northeast and northwest to Pintail Point in Bay Gardene. At Pintail Point proceed east-northeast to Bayou Lost to the Louisiana Fish and Wildlife Camp. The site is along the south shore of the western end of Bayou Lost, west of the Fish and Wildlife Camp.

This site is located on small unnamed islands between Bayou Lost and Lonesome Island. Oysters are collected by dredge off the western tip of the island. Landmarks used to located the position are: 68 degrees to the Fish and Wildlife camp, 129° to white grain elevators, and 293° to the oil terminal.

Sediments are collected by box corer in subtidal waters adjacent to the oyster collection areas.

SAMPLING METHOD - Oysters are collected by hand and with a dredge. Sediments are collected with a box corer and a Teflon scoop.

SITE - Lake Borgne, Malheureux Point, LA

SITE CODE - LBMP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 52.02'N
89° 40.70'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 11371 (NAD 1927)

SITE DESCRIPTION - Access to the site is via Louisiana Highway 39 to Shell Beach. At Shell Beach, launch a boat in Bayou Yscloskey and proceed north across the Mississippi River Gulf Outlet Canal and into Lake Borgne. Enter the lake and proceed to the west side of Old Fort Beauregard. Run time to the site is less than a half-hour. The site is located on the west side of Old Fort Beauregard. Oysters are collected from intertidal waters in mud and attached to bricks from the historic fort.

LOUISIANA SITES

Sediments are collected adjacent (25 meters) to each of the oyster stations in 1 meter of water.

SAMPLING METHOD - Oysters are collected by commercial dredge or by hand. Sediments are collected with a box corer and by a Teflon scoop.

SITE - Lake Borgne, New Orleans, LA

SITE CODE - LBNO

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 56.60'N
89° 50.10'W

WATER DEPTH - 0.1 meter

LOCATED ON NOS CHART - 11364 (NAD 1927)

SITE DESCRIPTION - Access is by boat, which can be launched at the marina north of Chalmette on Louisiana Highway 47. From the marina travel north to Bayou Bienvenue, then east to the first channel or continue on to the Mississippi River Gulf Outlet Canal, turn right southeast and continue on for 5 miles, then turn right into Lake Borgne.

The site is located on the west side of Lake Borgne, just inside the pass into the lake along the south shore, and is due south of Martello Castle.

The sediment sites are located 50 meters offshore to the north of each oyster station in an east to west line.

SAMPLING METHODS - Oysters are collected by hand and sediments are collected with a box corer.

SITE - Barataria Bay, Turtle Bay, LA

SITE CODE - BBTB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 30.67'N
90° 05.00'W

WATER DEPTH - 2 meters

LOUISIANA SITES

LOCATED ON NOS CHART - 11352 (NAD 1983)

SITE DESCRIPTION - Access to this collection site is at the marina at the end of Louisiana Highway 45. By boat, proceed north on Barataria Waterway and turn left into Bayou Rigolettes. Follow Bayou Rigolettes south of Harvey Cutoff and then south to Turtle Bay. In Turtle Bay proceed southeast for approximately 1.2 miles past the mouth of Long Bay to the mouth of Bayou St. Denis, passing several small islands en route.

The site is located on the south side of the entrance to Bayou St. Denis from Little Lake at a row of red and white poles that parallel the shoreline to the south. Landmarks to locate the site are: 110° to a small treed island and 30° to a green camp house and silver storage tank.

Sediments are taken along the shoreline to the south.

SAMPLING METHODS - Oysters are collected with a dredge and sediments are sampled with a box corer.

SITE - Barataria Bay, Bayou Saint Denis, LA

SITE CODE - BBSD

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 24.18'N
89° 59.75'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11358 (NAD 1927; September 21, 1985)

SITE DESCRIPTION - The site is accessed by boat, launching at the Happy Jack Marina in Point Sulfur or the Cheramies Marina in Grand Isle. From Grand Isle proceed north up the Barataria Waterway to green channel marker 31. This site is located in Bayou Cholas on the west side of Barataria Bay and the Barataria Waterway. Oysters are collected in the bay area and along the shoreline of the small island on the north side of the bay. In 1986 and 1987, oysters were taken from the intertidal mud and sand bottom on the west side of the island, west of green channel marker 31. In 1988, the oysters were collected from a submerged reef (water depth of 3 meters) west of Barataria Waterway between channel marker 30 and 33, near several small islands to the west in Bayou Cholas. In 1989-90 the oyster site was again moved, this time approximately 500 yards to the east. The oysters were located on the island directly west of channel marker 33.

Sediments are taken from subtidal areas west of channel marker 26.

SAMPLING METHOD - Oysters are collected by hand, with tongs, or by commercial dredge. Sediments are taken with a box corer.

LOUISIANA SITES

SITE - Barataria Bay, Middle Bank, LA

SITE CODE - BBMB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 16.55'N
89° 56.53'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 11358 (NAD 1927)

SITE DESCRIPTION - The site is accessed by a boat launched at Cheramines Marina in Grand Isle. From the marina proceed east across Barataria Pass to the Louisiana Fish and Wildlife Camp, located on the northwestern tip of the westernmost island of the Grand Terre Islands. Run time is less than 10 minutes.

This site is located in *Spartina* marsh along the channel going to the Grand Terre Fish and Wildlife station on the east side of the channel to the Fish and Wildlife Camp harbor. The site is only 10 minutes from Grand Isle. Oysters and sediments are collected from intertidal waters inside the Fish and Wildlife boat basin.

Sediments are collected along the channel adjacent to each of the oyster stations.

SAMPLING METHOD - Oysters are collected by hand and sediments with a Teflon scoop.

SITE - Terrebonne Bay, Lake Felicity, LA

SITE CODE - TBLF

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 15.80'N
90° 24.40'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 11357 (NAD 1927)

SITE DESCRIPTION - The launch/departure point is Coco Marina at Cocodrie or the boat ramp at the Louisiana Marine Consortium, and the run time is approximately 1.5 hours to the site by boat. A deep draft outboard must enter and cross Terrebonne Bay to Lake Felicity. A shallow draft outboard can shortcut up the bayou to enter and cross Lake Barre (see directions for TBLB below). The site is located at an abandoned and dilapidated fish camp on the southeast side of Lake Felicity, near Bayou Point Au Chien. The oysters are intertidal and interspersed in the grass beds on the small islands surrounding the fish camp. Sediments are co-located with the oysters.

SAMPLING METHODS - Oysters are collected by hand and sediments are collected with a Teflon scoop.

LOUISIANA SITES

SITE - Terrebonne Bay, Lake Barre, LA

SITE CODE - TBLB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 15.60'N
90° 35.70'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 11357 (NAD 1927)

SITE DESCRIPTION - Access to the site is by boat launched in Cocodrie at the Coco Marina. Proceed north on Bayou Petit Caillou. Turn right (east) into Lapeyrouse Canal and proceed to Bayou Terrebonne, turn south and proceed to the third cut into Bay la Fleur. Run time to the site is approximately a half-hour.

Sediment collections are co-located with each of the oyster stations.

SAMPLING METHOD - Oysters are collected by hand and sediments are collected with a Teflon scoop.

SITE - Caillou Lake, LA

SITE CODE - CLCL

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 15.25'N
90° 55.80'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 11356 (NAD 1927; August 16, 1986)

SITE DESCRIPTION - A boat launch is at Bayou Dularge Sporting Goods at the end of Louisiana Highway 315. Take Bayou Dularge southwest to the channel separating Lake Caillou and Lake Merchant, and turn south toward the Fish and Wildlife Camp on the island. Run time to the site is three-quarters of an hour. The site is located in Lake Caillou on a submerged reef running from channel marker 16 to the Louisiana Fish and Wildlife Camp. The reef is usually closed to oystering, and it is necessary to notify the Fish and Wildlife Camp prior to sampling.

Subtidal oysters were patchy on the bottom running in a line from the channel marker to the camp.

Sediments are located to the north of the oyster site, along the shoreline that separates Bayou Dularge from Lake Caillou.

SAMPLING METHOD - Oysters are sampled with a dredge or tongs. Sediments are sampled with a box corer.

LOUISIANA SITES

SITE - Atchafalaya Bay, Oyster Bayou, LA

SITE CODE - ABOB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 14.40'N
91° 08.10'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11351 (NAD 1927)

SITE DESCRIPTION - The launch ramp for this site is at Dularge Sporting Goods. From there proceed south on Bayou Dularge across Caillou Lake and into the open Gulf and then west along the beachfront to Oyster Bayou. The sampling stations are located throughout the length of Oyster Bayou, which joins Four League Bay with the Gulf of Mexico on the south. Landmarks include the channel entrance marker, an abandoned shrimp-drying facility, and the ends of the bayou where it enters the bay and Gulf.

Sediments can be found at the mouth of Oyster Bayou.

SAMPLING METHOD - Oysters are collected by hand, and with a dredge, or they may be purchased. Sediments are collected with a box corer.

SITE - East Cote Blanche, South Point, LA

SITE CODE - ECSP

TARGET SPECIES - Only sediments were sampled at this site.

SITE CENTER COORDINATES - 29° 28.50'N
91° 48.00'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHARTS - 11351 (NAD 1983)

SITE DESCRIPTION - A dead oyster reef is found at the mouth of Oyster Bayou (through Marsh Island), and spartina beds are located at the shoreline. No oysters were sampled/available; only sediments were sampled. This site is located on the southeast side of Marsh Island. Sediments can be found at the mouth of Oyster Bayou.

SAMPLING METHOD - Sediments are collected with a box corer.

LOUISIANA SITES

SITE - Vermilion Bay, Southwest Pass, LA

SITE CODE - VBSP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 34.60'N
92° 02.75'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 11349 (NAD 1927, April 19, 1986)

SITE DESCRIPTION - The departure point and boat launch are at Cypremort Point State Park. Run time across Vermilion Bay is about an hour. To avoid shoals, stay in the channel until seaward of channel marker 3 or well into Vermilion Bay. The site is located adjacent to the channel outside of Lighthouse Point in Lease 25918. Oysters are located at the mouth of Southwest Pass.

The sediment collection site is approximately 100 meters from shore. Fine-grained sediments are located northwest from channel marker 3, less than 100 meters from shore, and approximately 0.5 miles from the site of the oyster collections.

SAMPLING METHOD - Oysters are sampled with a dredge and sediments are sampled with a box corer.

SITE - Joseph Harbor Bayou, LA

SITE CODE - JHJH

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 37.75'N
92° 45.75'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHARTS - 11345 and 11344 (both NAD 1927)

SITE DESCRIPTION - Access to the site is by boat launched at the Gran Chenier Boat Ramp on Highway 82, west of North Island canal. Then proceed south along a man-made channel to the mouth of Joseph Harbor Bayou. Run time to the site is approximately a half-hour. The collection sites are located on both sides of the channel. Oysters are found in intertidal waters on a mud and shell bottom.

Sediment stations are co-located with each oyster collection site.

SAMPLING METHOD - Oysters are sampled by hand and sediments with a Teflon scoop.

LOUISIANA SITES

SITE - Calcasieu Lake, St. Johns Island, LA

SITE CODE - CLSJ

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 49.83'N
93° 23.00'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11347 (NAD 1927)

SITE DESCRIPTION - Travel to the site by going north to West Pass and then west along West Pass until its entrance into West Cove. A boat can be launched at the ramp in Calcasieu Channel at Cameron. The ramp is located on the west bank of the channel at the ferry. Run time to the site is 15 minutes by water. The site is in West Cove near the mouth of West Pass, between the shoreline and Rabbit Island.

Sediments are collected at stations adjacent to the oyster reef.

SAMPLING METHOD - Oysters are collected with tongs and sediments are collected with a box corer.

SITE - Calcasieu Lake, Lake Charles, LA

SITE CODE - CLLC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 30° 03.50'N (1986-1989)
93° 17.50'W

WATER DEPTH - 0.2 meter

30° 03.42'N (1990)
93° 18.42'W

LOCATED ON NOS CHART - 11347 (NAD 1927)

SITE DESCRIPTION - Access to the site is via Louisiana Highway 384 to Deatonville, with a boat launch located at the Cajun Cove Marina. The channel going out from the launch is very shallow at low tide. From 1986 to 1989 the site was reached from the launch by proceeding southeast along the shoreline for approximately 700 meters to a long pier at the Reef Restaurant. This old collection site was located in the northeast end of Calcasieu Lake. Oysters were scattered on a submerged (0.75 to 1 meter deep) muddy reef. In 1990 the site was moved. The collection site was relocated about a mile west due to the lack of live oysters at the previous site. The site is now reached by proceeding at a bearing of 260° from the ramp to the shell island, being careful of shoals and various oil-well-related obstructions. The site is located on the eastern spit of a small island that separates East and West Pass, and is near the southern entrance into Turner Bay from

LOUISIANA SITES

East Pass. This new site is found on a shallow oyster shell reef with nearby *Spartina* marshes. Sediment collection sites are co-located with each oyster site.

SAMPLING METHODS - Oysters are collected by hand and with tongs. Sediments are collected with a box corer.

SITE - Sabine Lake, Blue Buck Point, LA

SITE CODE - SLBB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 47.50'N
93° 54.42'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11342 (NAD 1927)

SITE DESCRIPTION - The site is accessed by boat launched at the ramp on the east side of Sabine Lake, at the base of the Highway 82 bridge at Mesquite Point. The ramp is on the right just after crossing into Louisiana. The site is north of the ramp at Blue Buck Point—about a 10-minute run by boat. The site is adjacent to Blue Buck Point in the lower part of Sabine Lake. Oysters can be collected by hand along the shoreline and by tonging in deeper water offshore from the point. Oysters occur in clumps on the shell and mud bottom.

Sediments are collected offshore in subtidal waters adjacent to the respective oyster sample stations.

SAMPLING METHODS - Oysters are collected by dredge, tongs or hand. Sediments are sampled with a box corer.

LOUISIANA SITES

Benthic Surveillance

SITE - Mississippi River Delta, Southeast Pass, LA

SITE CODE - MRDSP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 29° 07.2'N
89° 04.2'W

**WATER DEPTH AT
NOMINAL CENTER** - 0.5 meter

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	29° 08.2'	89° 02.7'
1985	29° 05.6'	89° 05.4'
1986	29° 05.6'	89° 05.4'
1987	29° 09.7'	89° 03.0'
1989	28° 59.3'	89° 02.5'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	29° 06.7'	89° 04.2'
1984	2	29° 04.8'	89° 03.6'
1984	3	29° 08.1'	89° 01.7'
1985	1	29° 07.2'	89° 04.1'
1985	2	29° 05.5'	89° 04.1'
1985	3	29° 08.2'	89° 02.4'
1986	1	29° 07.2'	89° 04.2'
1986	2	29° 05.5'	89° 04.1'
1986	3	29° 08.2'	89° 02.4'
1987	1	29° 07.2'	89° 04.2'
1987	2	29° 05.5'	89° 04.1'
1987	3	29° 08.1'	89° 02.4'
1989	1	29° 06.9'	89° 04.2'
1989	2	29° 05.6'	89° 04.1'
1989	3	29° 08.4'	89° 02.3'
1990	1	29° 07.2'	89° 04.1'
1990	2	29° 06.0'	89° 04.1'
1990	3	29° 08.0'	89° 02.8'

LOCATED ON NOS CHART - 11361 (NAD 1927; April 4, 1987)

SITE DESCRIPTION - The site center for this site is located northeast of Redfish Bay, south of Blind Bay and in Southeast Pass just before it splits to the Southeast Pass and Northeast Pass. It is 1.6 nautical miles southwest of the Northeast Pass tower, and just northeast of the Coast Guard tower.

LOUISIANA SITES

SITE - Mississippi River Delta, Head of Passes, LA

SITE CODE - MRDHP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)
Arius felis (hardhead catfish)

NOMINAL SITE CENTER - 29° 12.6'N
 89° 16.7'W

**WATER DEPTH AT
 NOMINAL CENTER** - 0.5 meter

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1990	29° 12.9'	89° 26.9'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	1	29° 12.0'	89° 15.8'
1990	2	29° 13.0'	89° 16.9'
1990	3	29° 12.8'	89° 17.5'

LOCATED ON NOS CHART - 11361 (NAD 1927, April 4, 1987)

SITE DESCRIPTION - The site is located on the east bank of the Mississippi River, 3.5 nautical miles north of the Head of Passes, and 0.3 nautical miles northwest of the Lookout tower.

SITE - Barataria Bay, Barataria Pass, LA

SITE CODE - BARBP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 29° 19.2'N
 89° 56.4'W

**WATER DEPTH AT
 NOMINAL CENTER** - 2 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	29° 16.9'	89° 56.8'
1985	29° 17.0'	89° 56.1'
1987	29° 17.0'	89° 56.1'
1989	29° 15.6'	89° 57.9'

LOUISIANA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	29° 26.9'	89° 58.7'
1984	2	29° 20.5'	89° 56.7'
1984	3	29° 17.5'	89° 56.0'
1985	1	29° 26.9'	89° 58.7'
1985	2	29° 20.5'	89° 56.7'
1985	3	29° 17.2'	89° 56.0'
1987	1	29° 26.8'	89° 59.0'
1987	2	29° 20.5'	89° 56.6'
1987	3	29° 17.3'	89° 56.1'
1987	4	29° 20.0'	89° 56.6'
1989	2	29° 20.5'	89° 56.7'
1989	3	29° 17.3'	89° 56.0'
1989	4	29° 19.9'	89° 56.6'

LOCATED ON NOS CHART - 11365 (NAD 1927; July 21, 1987)

SITE DESCRIPTION - This site is located in Barataria Bay, north of Grand Terre Island and east of Barataria Waterway. It is north-northeast of R N" 2" 9 by 0.4 nautical miles, and 0.3 nautical miles west of R N" 4" .

SITE - Calcasieu River, Prien Lake, LA

SITE CODE - CALPL

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1990)
Arius felis (hardhead catfish) (1990)

NOMINAL SITE CENTER - 30° 11.6'N
 93° 17.1'W

**WATER DEPTH AT
 NOMINAL CENTER** - 2 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1990	30° 11.3'	93° 17.0'

LOUISIANA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	1	30° 12.0'	93° 17.1'
1990	2	30° 11.6'	93° 17.1'
1990	3	30° 11.3'	93° 17.0'

LOCATED ON NOS CHART - 11347 (NAD 1983; May 30, 1992)

SITE DESCRIPTION - The center of activities is located in the northwest part of Prien Lake, east of Rose Bluff Cutoff, near the mouth of Bayou d' Inde.

SITE - Calcasieu River, West Cove, LA

SITE CODE - CALWC

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1990)
Arius felis (hardhead catfish) (1990)

NOMINAL SITE CENTER - 29° 52.4'N
 93° 22.2'W

**WATER DEPTH AT
 NOMINAL CENTER** - 4 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1990	29° 53.1'	93° 20.8'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	1	29° 52.8'	93° 21.5'
1990	2	29° 52.1'	93° 21.8'
1990	3	29° 52.3'	93° 22.8'

LOCATED ON NOS CHART - 11347 (NAD 1927; July 4, 1987)

SITE DESCRIPTION - This site is located north of Calcasieu Channel in West Cove. It is 1.4 nautical miles northeast of Rabbit Island, 1.3 nautical miles west-northwest of Fl G 6 sec 30ft 4m "63" on Calcasieu Channel, and 1.5 nautical miles northeast of Fl G 4sec 30ft 4m "65" on the Calcasieu Channel.

LOUISIANA SITES

SITE - Calcasieu River, Bayou d' Inde, LA

SITE CODE - CALBI

TARGET SPECIES - *Arius felis* (hardhead catfish)

NOMINAL SITE CENTER - 30° 12.6'N
93° 18.1'W

**WATER DEPTH AT
NOMINAL CENTER** - 4 meters

CENTER OF FISHING ACTIVITIES:

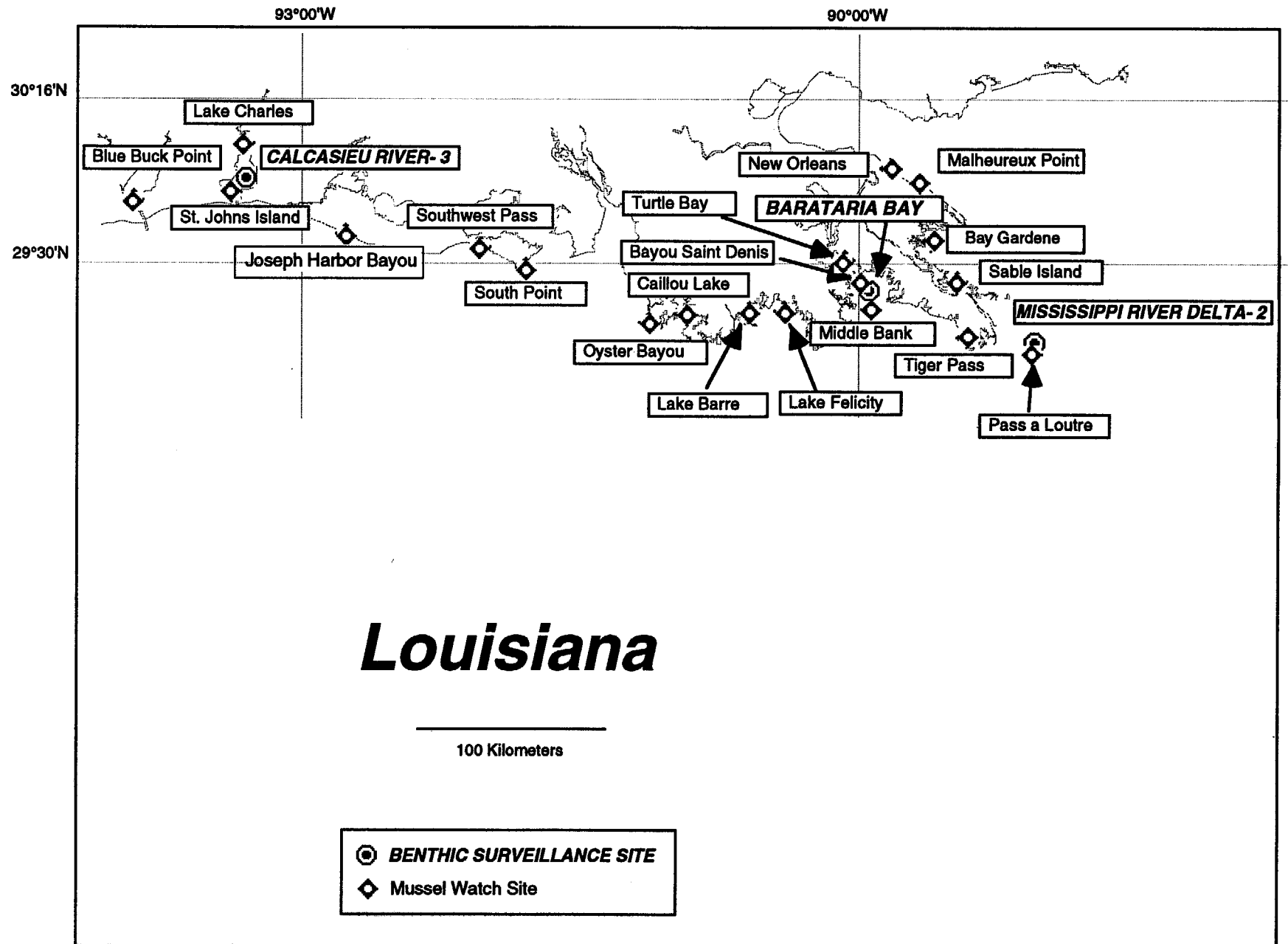
SAMPLE YEAR
1990

LATITUDE (N)
30° 12.6'

LONGITUDE (W)
93° 18.1'

LOCATED ON NOS CHART - 11347 (NAD 1983; May 30, 1992)

SITE DESCRIPTION - This site is west of Prien Lake, north of the Calcasieu River and the Rose Bluff Cutoff. It is 1.3 nautical miles westward into Bayou d'Inde.



TEXAS SITES

Mussel Watch

SITE - Galveston Bay, Ship Channel, TX

SITE CODE - GBSC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 42.27'N
94° 59.58'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11326 (NAD 1927)

SITE DESCRIPTION - This collection site is located at the mouth of Goose Creek in Tabbs Bay. Access to the site is by boat launched at The Galley Restaurant and Marina, south of U.S. Highway 146 on Black Duck Bay.

The three oyster stations were located approximately 150 meters off of Tabbs Bay point in a south to north line on a submerged reef marked by concrete pilings. Oysters are collected with tongs in 1 to 1.5 meters of water on the submerged reef.

Sediment stations are located east of the oyster stations.

SAMPLING METHODS - Oysters are sampled with tongs and sediments with a box corer.

SITE - Galveston Bay, Yacht Club, TX

SITE CODE - GBYC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 37.30'N
94° 59.50'W

WATER DEPTH - 0.5 meters

LOCATED ON NOS CHARTS - 11326 and 11322 (both NAD 1927)

SITE DESCRIPTION - The collection site during 1986 and 1987 was a walk-up site just north of the Houston Yacht Club (HYC). In these first two years, the site was along the shore in front of the third house north of HYC, in from the retaining wall. In 1988 the site was moved near the judge's stand outside of the yacht club. The site is accessed by boat launched at the Houston Yacht Club or from Eagle Point Marina. At this intertidal site, oysters are found in the middle portion of Galveston Bay, near Shore Acres and just north of Red Bluff.

Sediments are subtidally collected just offshore (100 meters) from the oyster stations, east of HYC property.

SAMPLING METHODS - Oysters are collected by hand and sediments with a box corer.

TEXAS SITES

SITE - Galveston Bay, Todd's Dump, TX

SITE CODE - GBTD

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 30.06'N
94° 53.82'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHARTS - 11326 and 11322 (both NAD 1927)

SITE DESCRIPTION - A boat may be launched from Eagle Point Marina. The collection site is made near an exposed reef midway between Eagle Point and Red Fish Island at Houston Ship Channel. The reef runs from Eagle Point to Red Fish Island. This is an extensive reef with several shipwrecks. Much of the reef is exposed at low tide.

Sediments are collected adjacent to the oyster site.

SAMPLING METHODS - Oysters are sampled with a dredge, with tongs, or are purchased. Sediments are sampled with a box corer.

SITE - Galveston Bay, Hanna Reef, TX

SITE CODE - GBHR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 28.85' N
94° 44.00'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHARTS - 11326 and 11322 (both NAD 1927)

SITE DESCRIPTION - The oyster site is the submerged reef northeast of the large exposed part (bearing 055°), and is marked by two telephone-pole-sized pilings. Also, at mid bay there is a solitary concrete piling and a six-leg wooden platform. The area is fished commercially and marked by many temporary stakes. The boat may be launched at the Eagle Point Marina. Hanna Reef is a large subtidal reef that runs northwest to southeast and separates East Bay from Galveston Bay. The large, exposed (only at low tide) portion of the reef, in the middle, serves as the point of reference for site identification.

Sediments are obtained by box corer adjacent to the oyster stations.

SAMPLING METHODS - Oysters are collected with a dredge, with tongs, or by hand. Sediments are collected with a box corer.

TEXAS SITES

SITE - Galveston Bay, Offatts Bayou, TX

SITE CODE - GBOB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 16.65'N (1988)
94° 50.87'W

WATER DEPTH - 0.5 meter

29° 17.08'N (1989-1990)
94° 50.15'W

LOCATED ON NOS CHARTS - 11322 and 11322 (both NAD 1927)

SITE DESCRIPTION - The original collection site was located in the middle of the south shore of Offatts Bayou. The stations are located along the shoreline, north of an open shed with a green roof. In 1989 the collection site was moved to the 61st Street Bridge at the public boat ramp.

Sediments can be collected at the east end of Offatts Bayou near the shoreline.

SAMPLING METHODS - Oysters are collected by hand and sediments with a box corer.

SITE - Galveston Bay, Confederate Reef, TX

SITE CODE - GBCR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 29° 15.75'N (Bivalves)
94° 54.88'W

WATER DEPTH - 0 meters

29° 16.10'N (Sediments)
94° 54.60'W

LOCATED ON NOS CHARTS - 11326 and 11322 (both NAD 1927)

SITE DESCRIPTION - This site is located on a reef between Deer Island and the shore. This large reef is exposed at low tide and is utilized by commercial and private fisherman. The site is accessed from a public boat ramp directly south of the site. Take Seawall Boulevard west to 8 Mile Road, which joins Anderson Ways Road at Stewart Street. Continue on Anderson to the north almost to West Bay, then turn at the last road to the west and proceed for approximately 1 mile. The boat ramp is on the right between two houses.

SAMPLING METHODS - Oysters are collected by hand and sediments with a box corer.

TEXAS SITES

SITE - Brazos River, Freeport Surfside, TX

SITE CODE - BRFS

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 55.25'N
95° 20.33'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11322 (NAD 1927)

SITE DESCRIPTION - This site is located along the Intracoastal Waterway and in the vicinity of the housing development with silted-in boat basins east of FM 1495. This intertidal site is accessed from the shore. From the intersection of FM 288 and 1495, drive south on FM 1495 to the Intracoastal Waterway and cross the drawbridge. Oysters can be collected easily by hand at low tide; otherwise, it is necessary to tong for bottom concrete rubble to which the oysters are attached.

Sediments are co-located with the oyster stations.

SAMPLING METHODS - Oysters are collected by hand. Sediments are collected with a box corer and a Teflon scoop.

SITE - Brazos River, Cedar Lakes, TX

SITE CODE - BRCL

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 51.50'N
95° 27.83'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11322 (NAD 1927)

SITE DESCRIPTION - This site is located on the east side of the San Bernard National Wildlife Refuge near Rivers End, approximately 2 miles west of the San Bernard River and south of the Intracoastal Waterway on the east side of Cedar Lakes. An old silted-in channel runs southwest off of the Intracoastal Waterway into Cedar Lakes. This area is predominated by very shallow bays with numerous oyster reefs surrounded by *Spartina* marshland. The site is located between the convergence of two spits, one from the north and one from the south.

A boat launch is located at the end of the road on FM 2918. From the boat ramp proceed southeast across the Intracoastal Waterway to the entrance at Cedar Lakes, then proceed west-southwest down the channel for approximately 0.75 miles to where the spits converge.

Sediments are co-located with the oysters and are collected by hand from within the oyster bed.

SAMPLING METHODS - Oysters are sampled by hand and sediments with a Teflon scoop.

TEXAS SITES

SITE - Matagorda Bay, East Matagorda, TX

SITE CODE - MBEM

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 42.67'N
95° 53.00'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 11319 (NAD 1927)

SITE DESCRIPTION - Sample collection areas are approximately 100 meters into east Matagorda Bay at the reefs located on either side of the channel. The exposed reefs extend out from Old Gulf Cut into East Matagorda Bay. The site is accessed via boat launched in Matagorda at the C&R Marina and Bait Camp next to the Matagorda Drawbridge, and then proceeding east along the Intracoastal Waterway to the first cut to the south.

Sediment can be collected 50 meters west of each of the three oyster stations.

SAMPLING METHOD - Oysters are collected by hand and sediments with a box corer.

SITE - Matagorda Bay, Dog Island, TX

SITE CODE - MBDI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 38.28'N
96° 00.15'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11319 (NAD 1927)

SITE DESCRIPTION - This site is located in east Matagorda Bay near Dog Island Reef. The launch point is at the public boat ramp on the Colorado River; proceed northwest to the Intracoastal Waterway, then southwest along the Intracoastal Waterway to Culver Cut. Go south to the first fork and then go east. Proceed to the second PVC pipe and then go south to the first iron structure, which is 200 meters from shore.

Sediments are co-located with the oysters.

SAMPLING METHODS - Oysters are collected by hand and sediments with a box corer.

TEXAS SITES

SITE - Matagorda Bay, Tres Palacios Bay, TX

SITE CODE - MBTP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 39.50'N
96° 13.45'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 11316 (NAD 1927; June 6, 1987)

SITE DESCRIPTION - The site is located on a string of reefs across the mouth of Green Island Bay. The reef extends from Coon Island to Oliver Point. A boat may be launched at the public boat ramp at Palacios. Proceed southwest out of the Palacios Channel for 2 nautical miles to channel marker 48, and then south-southeast across the bay to the northeast end of the Coon Island Reef (15-minute run time).

Sediments are collected adjacent to the oyster site.

SAMPLING METHOD - Oysters are sampled with tongs and by hand. Sediments are sampled by Teflon scoop and with a box corer.

SITE - Matagorda Bay, Carancahua Bay, TX

SITE CODE - MBCB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 39.40'N
96° 23.18'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11318 (NAD 1927)

SITE DESCRIPTION - This site is located on the east side of Carancahua Bay directly across the bay from Port Alto. Several houses are located on or near this point. The site is a shoreline site and can be collected from the shore at low tide. In 1988 this collection site was accessed via boat from a launch point on U.S. Highway 35. The public boat ramp located on the highway is silted-in near the mouth so only a small boat can be launched. Proceed directly south down the bay for 4.5 nautical miles, then turn to the east toward a point with a PVC marker.

Sediments are located 200 meters to the south and west of each oyster station.

SAMPLING METHODS - Oysters are collected by hand and sediments with a box corer.

TEXAS SITES

SITE - Matagorda Bay, Lavaca River Mouth, TX

SITE CODE - MBLR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 41.00'N (1986-1988)
96° 34.65'W

WATER DEPTH - 0.2 meter

28° 39.80'N (1989-1990)
96° 34.83'W

LOCATED ON NOS CHART - 11316 (NAD 1927; June 6, 1987)

SITE DESCRIPTION - The original site was a submerged reef approximately one-half mile south of the river mouth, with the Highway 35 bridge to the south and the plastics plant to the east. The site was an exposed reef on the east side of the channel entering the Lavaca River. Oysters were located only on the west side of the reef between channel marker 22 and the river mouth to the north. In 1989 the site was moved because of difficulty in finding oysters. The oyster site is now located on the north shore causeway where it joins the Highway 35 bridge. Reported contaminant concentrations may have increased for this site in 1989 because the site was moved closer to an aluminum plant. The current oyster site is accessible from Highway 35 and can be sampled entirely by hand.

The previous oyster site and the current sediment site are accessed by launching a boat at Port Lavaca State Park and proceeding for approximately one-half hour to the mouth of the Lavaca River.

Sediments are collected by box corer at stations spaced equidistant and extending from channel marker 22 to the river mouth.

SAMPLING METHOD - Oysters are collected using a dredge, with tongs, or by hand. Sediments are collected using a box corer.

SITE - Matagorda Bay, Gallinipper Point, TX

SITE CODE - MBGP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 35.25'N
96° 34.17'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 11316 (NAD 1927; June 6, 1987)

SITE DESCRIPTION - This site is a subtidal reef approximately 400 meters off the north shore of Gallinipper Point. The reef runs on a line from the aluminum plant to a house on the shoreline

TEXAS SITES

with an asymmetrically pitched roof and a fireplace chimney. The reef is south of channel marker 63. The site is accessed via boat launched from Port Lavaca State Park. Follow the channel down to Gallinipper Point at channel marker 63.

Sediments are obtained by box corer from an area northwest of the reef between the high range marker and Alamo Beach.

SAMPLING METHOD - Oysters are sampled with a dredge and sediments with a box corer.

SITE - Espiritu Santo, Bill Days Reef, TX

SITE CODE - ESD

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 24.85'N
96° 26.27'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHARTS - 11315 and 11319 (both NAD 1927)

SITE DESCRIPTION - The site is located at Bill Days Reef, which is in Barroom Bay south of Port O'Connor. The reef is oriented almost east-west. Oysters are collected by hand on the exposed portion of the south side of Bill Days Reef in intertidal water near the northernmost duck blind at the east end of the reef. Access to the site is from Port O'Connor via the Intracoastal Waterway to Espiritu Santo Bay.

Sediments are collected near the reef each year.

SAMPLING METHOD - Oysters are collected by hand and sediments with a Teflon scoop.

SITE - Espiritu Santo, South Pass Reef, TX

SITE CODE - ESSP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 17.90'N
96° 37.33'W

WATER DEPTH - 0.5 meter

TEXAS SITES

LOCATED ON NOS CHART - 11315 (NAD 1983)

SITE DESCRIPTION - The site is located between Grass Island on the north and Steamboat Island on the south. The site is composed of a series of low exposed reefs at 105° from the pumping station, 240° from the water tower and 150° from the southeasternmost point of Steamboat Island. The sample area is an intertidal reef. Oyster collection areas are 100 meters apart on a north-south line along the exposed reef. The site is accessed by boat launched at Swan Point near Seadrift, then proceeding southeast on the Victoria Barge Canal to the Intracoastal Waterway and then east to the site. At South Pass Island, there is an oil production site with a compressor station and buildings a few hundred meters southeast of the site. Approximate run time to the site is 45 minutes.

Sediments are taken from subtidal mud 500-1,000 meters to the north at three random stations in all years.

SAMPLING METHOD - Oysters are collected by hand and sediments with a box corer.

SITE - San Antonio Bay, Mosquito Point, TX

SITE CODE - SAMP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 20.65'N
96° 42.78'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHART - 11315 (NAD 1983; March 14, 1987)

SITE DESCRIPTION - The collection area is located off Mosquito Point west of the Victoria Barge Canal and southwest of channel marker 15. Oysters are collected on the exposed intertidal reef. Access is by boat launched at Seadrift, Port O'Connor or Port Lavaca. Run time by boat is 30 minutes from Seadrift, one hour from Port O'Connor, and 2-3 hours from Port Lavaca. From Swan Point, near Seadrift, go out the channel (which is very shallow at low tide) and proceed southeast in the Victoria Barge Canal to channel marker 15, where you turn southwest to the exposed reef.

Sediments are collected in subtidal areas adjacent to the oyster collection areas. In 1988, sediment samples were collected from soft sandy mud bottom over shell hash approximately 100-200 meters north of the reef in 1 to 1.5 meters of water.

SAMPLING METHOD - Oysters are collected by hand and sediments are collected with a box corer.

TEXAS SITES

SITE - San Antonio Bay, Panther Point Reef, TX

SITE CODE - SAPP

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 14.00'N
96° 42.55'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 11315 (NAD 1983)

SITE DESCRIPTION - The site is located on the reef that extends to the northwest off of Panther Point. This submerged reef is located 300 to 400 meters from a production platform at a bearing of 260° and 100 meters from the black and white PVC pole marking the top of the reef. This subtidal reef is located to the northeast and east side of the white plastic pole off the northwest end of Panther Point. Oysters and moderately dense "grass beds" are widely dispersed on the sandy bottom. To reach the site a boat is launched at Seadrift, Port O'Connor or Port Lavaca. Run time is 30 minutes by boat from Seadrift, one hour from Port O'Connor, and 2-3 hours from Port Lavaca.

Sediments are collected at the same stations where oysters are located.

SAMPLING METHODS - Oysters are collected by hand, with tongs, or with a dredge. Sediments are collected with a box corer.

SITE - Mesquite Bay, Ayres Reef, TX

SITE CODE - MBAR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 10.15'N
96° 49.95'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 11315 (NAD 1983; March 14, 1987)

SITE DESCRIPTION - This site is located on the north side of Mesquite Bay between Matagorda Island to the southeast and the Aransas National Wildlife Refuge. The reef is oriented in a northwest-southeast direction and the site is located in the middle of the reef at Ayres Dugout. A boat may be launched at Fulton Beach, at the Sand Dollar Pavilion. Follow the Intracoastal waterway northeast to channel marker 79. Run time to the site is at least an hour in good weather.

Sediments are collected approximately 400 meters to the northeast of the Dugout in Ayres Bay.

SAMPLING METHOD - Oysters are collected by hand and sediments with a box corer.

TEXAS SITES

SITE - Aransas Bay, Long Reef, TX

SITE CODE - ABLR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 03.88'N (1986-1989)
96° 57.80'W

WATER DEPTH - 1 meter

28° 02.96'N (1990)
96° 56.77'W

LOCATED ON NOS CHART - 11314 (NAD 1927; August 15, 1987)

SITE DESCRIPTION - The site is located across Aransas Bay almost due east from Fulton on a reef that extends from St. Joseph Island into the bay. Oysters are collected by hand from the exposed intertidal reef, which is composed mainly of dead shell. In 1990 live oysters could not be located at the previously collected locations, so the site was moved along the reef closer to the shore approximately 1 mile to the southeast. To reach the site, launch at the public boat ramp near the harbor. Travel across the bay to the Intracoastal Waterway and then turn northeast until channel marker 25 is reached.

Sediments are collected by box corer from the east and west sides of the reef.

SAMPLING METHODS - Oysters are collected by hand and with tongs. Sediments are collected with a box corer.

SITE - Copano Bay, Copano Reef, TX

SITE CODE - CBCR

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 28° 08.47'N
97° 07.67'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 11314 (NAD 1927)

SITE DESCRIPTION - The site is located on an exposed intertidal reef at the north side of Copano Bay at Copano Point. The reef runs southeast from Copano Point and the site is located around the white pole with a Texas Parks and Wildlife marker stating "Copano Reef." Access to the site is via boat launched at Pouzee's Marine, at Lone Tree Point in Rockport. From Pouzee's, go northwest to Copano Reef.

Sediments are collected in subtidal areas in 1 to 1.5 meters of water and approximately 50-100 meters west of the oyster sampling area.

SAMPLING METHODS - Oysters are collected by hand and sediments are collected with a box corer.

TEXAS SITES

SITE - Aransas Bay, Harbor Island, TX

SITE CODE - ABHI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 50.33'N
97° 04.52'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHARTS - 11309 and 11314 (both NAD 1927)

SITE DESCRIPTION - The collection site is located on Mustang Island on the south side of the Intracoastal Waterway directly across from Harbor Island. The site is near a public-access area with fishing piers. It is reached by crossing the Port Aransas ferry and traveling west past the University of Texas Marine Sciences building to the end of the paved road. The site is north of the sand parking lot. Oysters are attached to riprap and rubble material around the base of the piers.

Sediment at the oyster site was predominantly sand; therefore, the sediments are collected 200 meters to the west of the oyster stations.

SAMPLING METHODS - Oysters are collected by hand and sediments with a Teflon scoop.

SITE - Corpus Christi, Ingleside Cove, TX

SITE CODE - CCIC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 50.28'N
97° 14.28'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11309 (NAD 1927)

SITE DESCRIPTION - The site is located along the west side of Ingleside Cove channel and north of Ingleside Point on the south tip of the spoil island. Oysters are located on an exposed reef and mud flat which is exposed during normal low tides. The site is surrounded by submerged seagrass beds. Landmarks to locate the site are Ingleside Point to the south and the dredge spoil island to the north. To reach the site, a boat is launched at the public boat ramp at Ingleside-On-The-Bay. A 15-minute ride across the La Quinta Ship Channel and Ingleside Cove is required to reach the site.

Sediment samples are collected 30 meters offshore to the west of the oyster collection site.

SAMPLING METHODS - Oysters are collected by hand and sediments with a Teflon scoop.

TEXAS SITES

SITE - Corpus Christi, Nueces Bay, TX

SITE CODE - CCNB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 51.17'N
97° 21.55'W

WATER DEPTH - 0.2 meter

LOCATED ON NOS CHART - 11309 (NAD 1927)

SITE DESCRIPTION - The site is located at Indian Point Marina on the north end of the U.S. Highway 181 bridge that crosses Nueces Bay. There is a boat launch at Gunterlands Boatland. Collection stations are located along the shoreline on the north side of the road. The site is located 100 meters from the boat ramp at a bearing of 325°. The bay is very shallow with exposed reefs. Intertidal oysters are collected along the mud shoreline or on pilings.

Sediments are collected adjacent to each oyster station.

SAMPLING METHODS - Oysters are collected by hand and sediments with a Teflon scoop.

SITE - Corpus Christi, Boat Harbor, TX

SITE CODE - CCBH

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 27° 50.17'N
97° 22.72'W

WATER DEPTH - 0 meters

LOCATED ON NOS CHART - 11309 (NAD 1927)

SITE DESCRIPTION - This site is located on the northeast end of Rincon Point at the junction of Nueces and Corpus Christi Bays. Oysters can be collected from the shoreline under the Highway 181 bridge, where they are attached to concrete and brick rubble. The bottom was a mixture of sand, shell, mud, trash, and concrete rubble. The site is reached by exiting off of U.S. Highway 181 at Corpus Christi and driving under the bridge as if going to the boat harbor north of the Corpus Christi Ship Channel.

Sediment was collected 10 to 20 meters offshore of each of the oyster collection stations.

SAMPLING METHODS - Oysters are collected by hand and sediments with a Teflon scoop.

TEXAS SITES

SITE - Lower Laguna Madre, Arroyo Colorado, TX

SITE CODE - LMAC

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 26° 16.80'N
97° 17.30'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11303 (NAD 1927, April 5, 1986)

SITE DESCRIPTION - The collection are located near cabins along the Intracoastal Waterway. Oysters are attached to the concrete pilings and on mud flats which are exposed at low tide. They can be collected in the area of channel marker 41, channel marker 43, and channel marker 45. Access to the site is by boat launched at the White Sands Marina in Port Isabel. Run time to the site is approximately 40 minutes up the Intracoastal Waterway.

Sediments are located in the vicinity of the oyster collections.

SAMPLING METHODS - Oysters are collected by hand and sediments with a Teflon scoop.

SITE - Lower Laguna Madre, Port Isabel, TX

SITE CODE - LMPI

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 26° 04.62'N
97° 12.05'W

WATER DEPTH - 0.25 meter

LOCATED ON NOS CHART - 11302 (NAD 1927)

SITE DESCRIPTION - This collection site is located along the south jetty of the Queen's Point Marina. Oysters are attached to the concrete bulkhead and are exposed at low tide. The site can be walked to from the parking lot at the Queen's Point Marina in Port Isabel.

Sediments are collected outside the bulkhead area.

SAMPLING METHODS - Oysters are collected by hand and sediments with a Teflon scoop.

TEXAS SITES

SITE - Lower Laguna Madre, South Bay, TX

SITE CODE - LMSB

TARGET SPECIES - *Crassostrea virginica* (American oyster)

SITE CENTER COORDINATES - 26° 02.77'N
97° 10.48'W

WATER DEPTH - 0.3 meter

LOCATED ON NOS CHART - 11302 (NAD 1927)

SITE DESCRIPTION - Oysters are located in intertidal clumps on expansive mud flats south of Clark Island on the northeast side of South Bay, and are fully exposed at low tide. The water depth is extremely shallow and requires the use of a very shallow draft vessel. To locate the reef take a bearing of 145° from the middle of the causeway bridge, and 90° from the navigational range marker. A boat can be launched at the public boat ramp on South Padre Island at the Isla Blanca Pier. Run time to South Bay is about 25 minutes.

The sediment site is adjacent to the oyster site.

SAMPLING METHODS - Oysters are collected by hand and sediments with a Teflon scoop.

TEXAS SITES

Benthic Surveillance

SITE - Galveston Bay, Eagle Point, TX

SITE CODE - GALEP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1984-1990)
Leiostomus xanthurus (spot) (1989)
Cynoscion arenarius (sand seatrout) (1989)

NOMINAL SITE CENTER - 29° 29.9'N
 94° 53.7'W

**WATER DEPTH AT
 NOMINAL CENTER** - 1.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	29° 30.6'	94° 54.6'
1985	29° 31.9'	94° 52.4'
1986	29° 27.7'	94° 56.0'
1987	29° 30.9'	94° 55.3'
1988	29° 29.3'	94° 51.8'
1989	29° 30.8'	94° 55.7'
1990	29° 30.8'	94° 52.8'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	29° 28.3'	94° 56.2'
1984	2	29° 29.0'	94° 54.3'
1984	3	29° 30.5'	94° 53.9'
1985	1	29° 28.3'	94° 56.3'
1985	2	29° 29.0'	94° 54.3'
1985	3	29° 30.7'	94° 54.7'
1986	1	29° 28.3'	94° 56.1'
1986	2	29° 29.0'	94° 54.4'
1986	3	29° 30.4'	94° 53.8'
1987	1	29° 30.8'	94° 54.2'
1987	2	29° 29.1'	94° 54.0'
1987	3	29° 28.5'	94° 56.2'
1988	1	29° 28.3'	94° 56.1'
1988	2	29° 28.2'	94° 57.1'
1988	3	29° 27.7'	94° 56.3'

LOCATED ON NOS CHART - 11326 (NAD 192; July 18, 1987)

SITE DESCRIPTION - The site center is located in the northern part of Galveston Bay, northeast of Eagle Point on the west side of the Houston Ship Channel. The center is located 0.4 nautical miles southeast of the Qk Fl R (privately maintained) buoy, 0.9 nautical miles southwest of the PA Fl G 2.5 sec 17ft "1" marker, and 0.4 nautical miles northeast of Eagle Point.

TEXAS SITES

SITE - Galveston Bay, East Bay, TX

SITE CODE - GALEB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1987, 1990)
Arius felis (hardhead catfish) (1990)
Pogonias cromis (black drum) (1990)
Sciaenops ocellatus (red drum) (1990)

NOMINAL SITE CENTER - 29° 27.3'N
 94° 42.8'W

**WATER DEPTH AT
 NOMINAL CENTER** - 1.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	29° 27.2'	94° 42.6'
1990	29° 27.8'	94° 41.6'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	29° 27.1'	94° 43.1'
1987	2	29° 27.2'	94° 42.7'
1987	3	29° 27.5'	94° 42.8'

LOCATED ON NOS CHART - 11331 (NAD 1927; November 24, 1984)

SITE DESCRIPTION - This site is located on the Galveston Bay side of Bolivar Peninsula, southeast of Hanna Reef, south of East Bay and north of Sievers Cove. The site center is 1 nautical mile southwest of Pepper Grove Point, and north-northwest of the F1 R 4sec 17ft 3m "4" marker on the south side of the intracoastal waterway in Sievers Cove.

SITE - Galveston Bay, Texas City, TX

SITE CODE - GALTC

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 29° 21.6'N
 94° 52.4'W

**WATER DEPTH AT
 NOMINAL CENTER** - 1.5 meters

TEXAS SITES

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	29° 19.7'	94° 52.8'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	29° 21.7'	94° 52.4'
1987	2	29° 21.4'	94° 52.5'
1987	3	29° 21.5'	94° 52.2'

LOCATED ON NOS CHART - 11322 (NAD 1927; November 14, 1987)

SITE DESCRIPTION - The site center is located southeast of Snake Island and northwest of Pelican Island, 0.81 nautical miles ESE of Iso G 6s 30ft marker on the south end of Snake Island, and 1.05 nautical miles SSW of the C"15" marker on the south side of the Texas City Channel.

SITE - Galveston Bay, Morgans Point, TX

SITE CODE - GALMP

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1987, 1988, 1990)
Sciaenops ocellatus (red drum) (1990)

NOMINAL SITE CENTER - 29° 42.0'N
 94° 59.8'W

**WATER DEPTH AT
 NOMINAL CENTER** - 1 meter

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	29° 41.4'	94° 59.4'
1988	29° 41.6'	94° 59.4'
1990	29° 41.0'	94° 59.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	29° 42.6'	95° 00.2'
1987	2	29° 42.5'	95° 00.3'
1987	3	29° 42.1'	95° 00.1'
1988	1	29° 41.3'	94° 59.1'
1988	2	29° 41.6'	94° 59.5'
1988	3	29° 41.9'	94° 59.8'

TEXAS SITES

LOCATED ON NOS CHART - 11326 (NAD 1927; July 18, 1987)

SITE DESCRIPTION - This site center is located east of Blackwell Peninsula, northwest of Tabbs Bay, north of Spilmans Island, south of Black Duck Bay, and 0.2 nautical miles north of the E Int R 6sec 44ft marker on Blackwell Peninsula.

SITE - Galveston Bay, Trinity Bay, TX

SITE CODE - GALTB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 29° 36.4'N
94° 45.5'W

**WATER DEPTH AT
NOMINAL CENTER** - 2 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR
1987

LATITUDE (N)
29° 42.4'

LONGITUDE (W)
94° 43.9'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	1	29° 37.0'	94° 45.6'
1987	2	29° 36.5'	94° 45.5'
1987	3	29° 35.9'	94° 45.4'

LOCATED ON NOS CHART - 11326 (NAD 1927; July 18, 1987)

SITE DESCRIPTION - This site center is located south of Double Bayou Channel in Trinity Bay, west of Lone Oak Bayou, and north of Vingt-et-Un Island. It is 1.7 nautical miles northwest of the QK Fl R privately maintained buoy, and 1.5 nautical miles southwest of Fl R 4 sec 17ft 4m "2" Ra Ref on Double Bayou Channel.

TEXAS SITES

SITE - Galveston Bay, Boggy Bayou, TX

SITE CODE - GALBB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 29° 44.4'N
95° 06.8'W

**WATER DEPTH AT
NOMINAL CENTER** - 11 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1987	29° 44.4'	95° 06.8'

LOCATED ON NOS CHART - 11329 (NAD 1983; December 2, 1989)

SITE DESCRIPTION - Only fish were collected at this site; no sediments were taken. This site is located in the middle of the Houston Ship Channel, north of Patrick Bayou. It is 220 meters northeast of the Fl G 4 sec 17ft "139" PA marker.

SITE - Galveston Bay, Greens Bayou, TX

SITE CODE - GALGB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker) (1988, 1989)
Leiostomus xanthurus (spot) (1989)
Cynoscion arenarius (sand seatrout) (1989)

NOMINAL SITE CENTER - 29° 44.6'N
95° 09.8'W

**WATER DEPTH AT
NOMINAL CENTER** - 18 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1988	29° 44.4'	95° 09.4'
1989	29° 44.4'	95° 09.4'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	1	29° 44.3'	95° 09.4'
1988	2	29° 44.7'	95° 09.8'
1988	3	29° 44.8'	95° 10.4'
1989	1	29° 44.3'	95° 09.4'
1989	2	29° 44.7'	95° 09.8'
1989	3	29° 44.8'	95° 10.4'

TEXAS SITES

LOCATED ON NOS CHART - 11329 (NAD 1983; December 2, 1989)

SITE DESCRIPTION - This site center is located in the Houston Ship Channel, southeast of Greens Bayou on the west side of the channel, 2 nautical miles west-northwest of the Fl R 2.5 sec 17ft "150" PA in the foul area marked on the chart.

SITE - Galveston Bay, Goat Islands, TX

SITE CODE - GALGI

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 29° 44.9'N
95° 03.8'W

**WATER DEPTH AT
NOMINAL CENTER** - 10 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR
1988

LATITUDE (N)
29° 44.9'

LONGITUDE (W)
95° 03.8'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	1	29° 44.4'	95° 03.5'
1988	2	29° 44.9'	95° 03.8'
1988	3	29° 45.4'	95° 04.1'

LOCATED ON NOS CHART - 11329 (NAD 1983; December 2, 1989)

SITE DESCRIPTION - This site is in the Houston Ship Channel, west of Goat Islands and east of San Jacinto State Park, 0.8 nautical miles southwest of the Qk Fl R 40ft marker, and 1.1 nautical miles northwest of the E Int R 6sec 55ft marker.

TEXAS SITES

SITE - Galveston Bay, Clear Lake, TX

SITE CODE - GALCL

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 29° 33.3'N
95° 02.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 1 meter

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1988	29° 33.3'	95° 02.5'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	1	29° 33.4'	95° 02.7'
1988	2	29° 32.9'	95° 01.7'
1988	3	29° 33.5'	95° 03.6'

LOCATED ON NOS CHART - 11326 (NAD 1927; July 30, 1983)

SITE DESCRIPTION - This site is located in Clear Lake, which is west of Galveston Bay. It is located on the north side of the channel that transects Clear Lake, 0.1 nautical miles east-southeast of channel marker R N "16."

SITE - Lavaca Bay, Lavaca Bay, TX

SITE CODE - LAVLB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 28° 38.8'N
96° 36.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 2 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1988	28° 40.4'	96° 35.5'
1990	28° 42.4'	96° 34.5'

TEXAS SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	1	28° 39.5'	96° 35.9'
1988	2	28° 38.8'	96° 35.4'
1988	3	28° 38.7'	96° 36.0'
1990	1	28° 39.7'	96° 36.2'
1990	2	28° 38.6'	96° 35.7'
1990	3	28° 38.4'	96° 36.1'

LOCATED ON NOS CHART - 11316 (NAD 1927; June 6, 1987)

SITE DESCRIPTION - This site is northeast of Noble Point on the west side of Lavaca Bay, 0.2 nautical miles off of the end off of the fishing pier, just east of the bridge that spans Lavaca Bay.

SITE - Lavaca Bay, Point Comfort, TX

SITE CODE - LAVPC

TARGET SPECIES - *Pogonias cromis* (black drum) (1988, 1990)
Sciaenops ocellatus (red drum) (1988, 1990)
Cynoscion nebulosus (spotted seatrout) (1988)
Arius felis (hardhead catfish) (1990)

NOMINAL SITE CENTER - 28° 39.3'N
 96° 34.6'W

**WATER DEPTH AT
 NOMINAL CENTER** - 2 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1988	28° 39.3'	96° 34.6'
1990	28° 39.3'	96° 34.6'

LOCATED ON NOS CHART - 11316 (NAD 1927, June 6, 1987)

SITE DESCRIPTION - This site is northeast of Point Comfort on the northwest corner of the spoil island in the mid-portion of Lavaca Bay, 0.5 nautical miles southeast of the Qk Fl 19ft marker, and 0.9 nautical miles northeast of the R "12" marker.

TEXAS SITES

SITE - San Antonio Bay, San Antonio Bay, TX

SITE CODE - SABSB

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 28° 13.2'N
96° 46.4'W

**WATER DEPTH AT
NOMINAL CENTER** - 1.5 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	28° 12.3'	96° 46.3'
1985	28° 12.3'	96° 46.3'
1986	28° 13.4'	96° 48.1'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	28° 14.2'	96° 46.2'
1984	2	28° 13.2'	96° 46.7'
1984	3	28° 12.3'	96° 46.2'
1985	1	28° 14.2'	96° 46.2'
1985	2	28° 13.2'	96° 46.7'
1985	3	28° 12.3'	96° 46.2'
1986	1	28° 14.4'	96° 46.3'
1986	2	28° 13.2'	96° 46.6'
1986	3	28° 12.3'	96° 46.2'
1989	1	28° 14.2'	96° 46.2'
1989	2	28° 13.2'	96° 47.1'
1989	3	28° 12.3'	96° 46.2'

LOCATED ON NOS CHART - 11315 (NAD 1983; March 14, 1987)

SITE DESCRIPTION - The Intracoastal Waterway is to the northwest of this site center, with Point of Ayres to the southwest and Shell Reef to the northwest. The GC "65" channel marker is 1.8 nautical miles to the northwest, and the GC "33" channel marker is 2.5 nautical miles to the north. Both of these channel markers are on the south side of the Intracoastal Waterway.

TEXAS SITES

SITE - Corpus Christi Bay, Long Reef, TX

SITE CODE - CCBLR

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)
Leiostomus xanthurus (spot) (1990)

NOMINAL SITE CENTER - 27° 49.6'N
 97° 17.4'W

**WATER DEPTH AT
 NOMINAL CENTER** - 4 meters

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	27° 49.5'	97° 17.4'
1985	27° 49.6'	97° 17.1'
1986	27° 48.6'	97° 18.9'
1988	27° 50.0'	97° 17.8'
1990	27° 49.8'	97° 18.0'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	27° 49.4'	97° 16.5'
1984	2	27° 49.6'	97° 17.4'
1984	3	27° 49.8'	97° 18.2'
1985	1	27° 49.4'	97° 16.5'
1985	2	27° 49.6'	97° 17.4'
1985	3	27° 49.8'	97° 18.2'
1986	1	27° 49.5'	97° 16.5'
1986	2	27° 49.7'	97° 17.4'
1986	3	27° 49.8'	97° 18.1'
1988	1	27° 49.4'	97° 16.4'
1988	2	27° 49.6'	97° 17.3'
1988	3	27° 49.7'	97° 18.3'
1990	1	27° 49.2'	97° 16.9'
1990	2	27° 49.6'	97° 17.6'
1990	3	27° 49.6'	97° 18.2'

LOCATED ON NOS CHART - 11309 (NAD 1983; December 2, 1989)

SITE DESCRIPTION - The Corpus Christi site center is located southwest of Long Reef and north of the Corpus Christi Channel. The Fl R 6 sec 17ft 3m "62" Ra Ref marker is 1.1 nautical miles southwest of the center, and the center is 1.2 nautical miles northwest of the Fl R 4 sec 17ft 3m "56" Ra Ref channel marker. Both of these channel markers are on the north side of the Corpus Christi Channel.

TEXAS SITES

SITE - Corpus Christi Bay, Corpus Christi Channel, TX

SITE CODE - CCBCC

TARGET SPECIES - No fish collection at this site

NOMINAL SITE CENTER - 27° 48.8'N
97° 24.2'W

**WATER DEPTH AT
NOMINAL CENTER** - 14 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	1	27° 48.7'	97° 23.6'
1990	2	27° 48.8	97° 24.2'
1990	3	27° 48.8	97° 24.8'

LOCATED ON NOS CHART - 11311 (NAD 1983; August 17, 1991)

SITE DESCRIPTION - The site is in the turning basin of the Corpus Christi Harbor, 0.45 nautical mile west of the bridge at the harbor entrance.

SITE - Lower Laguna Madre, Laguna Heights, TX

SITE CODE - LLMLH

TARGET SPECIES - *Micropogonias undulatus* (Atlantic croaker)

NOMINAL SITE CENTER - 26° 06.5'N
97° 15.4'W

**WATER DEPTH AT
NOMINAL CENTER** - 1 meter

CENTER OF FISHING ACTIVITIES:

SAMPLE YEAR	LATITUDE (N)	LONGITUDE (W)
1984	26° 05.2'	97° 14.3'
1985	26° 05.1'	97° 15.2'
1986	26° 04.9'	97° 14.2'
1988	26° 05.5'	97° 15.8'

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	1	26° 05.1'	97° 14.8'
1984	2	26° 06.5'	97° 15.4'

TEXAS SITES

1984	3	26° 08.5'	97° 15.9'
1985	1	26° 05.1'	97° 14.8'
1985	2	26° 06.5'	97° 15.4'
1985	3	26° 08.5'	97° 15.9'
1986	1	26° 05.1'	97° 14.8'
1986	2	26° 06.5'	97° 15.4'
1986	3	26° 08.5'	97° 15.9'
1988	1	26° 05.1'	97° 14.8'
1988	2	26° 06.5'	97° 15.4'
1988	3	26° 08.5'	97° 15.9'

LOCATED ON NOS CHART - 11302 (NAD 1927; April 4, 1987)

SITE DESCRIPTION - The Lower Laguna Madre site center is west of the Intracoastal Waterway, southeast of the Laguna Vista Cove, and north of Laguna Heights. The center is 2.45 nautical miles west of the Fl G 4s 17ft 3m "131" Ra Ref marker, and 2.37 nautical miles southwest of the Fl G 6s 17ft 4m "115" Ra Ref marker. Both markers are on the east side of the Intracoastal Waterway.

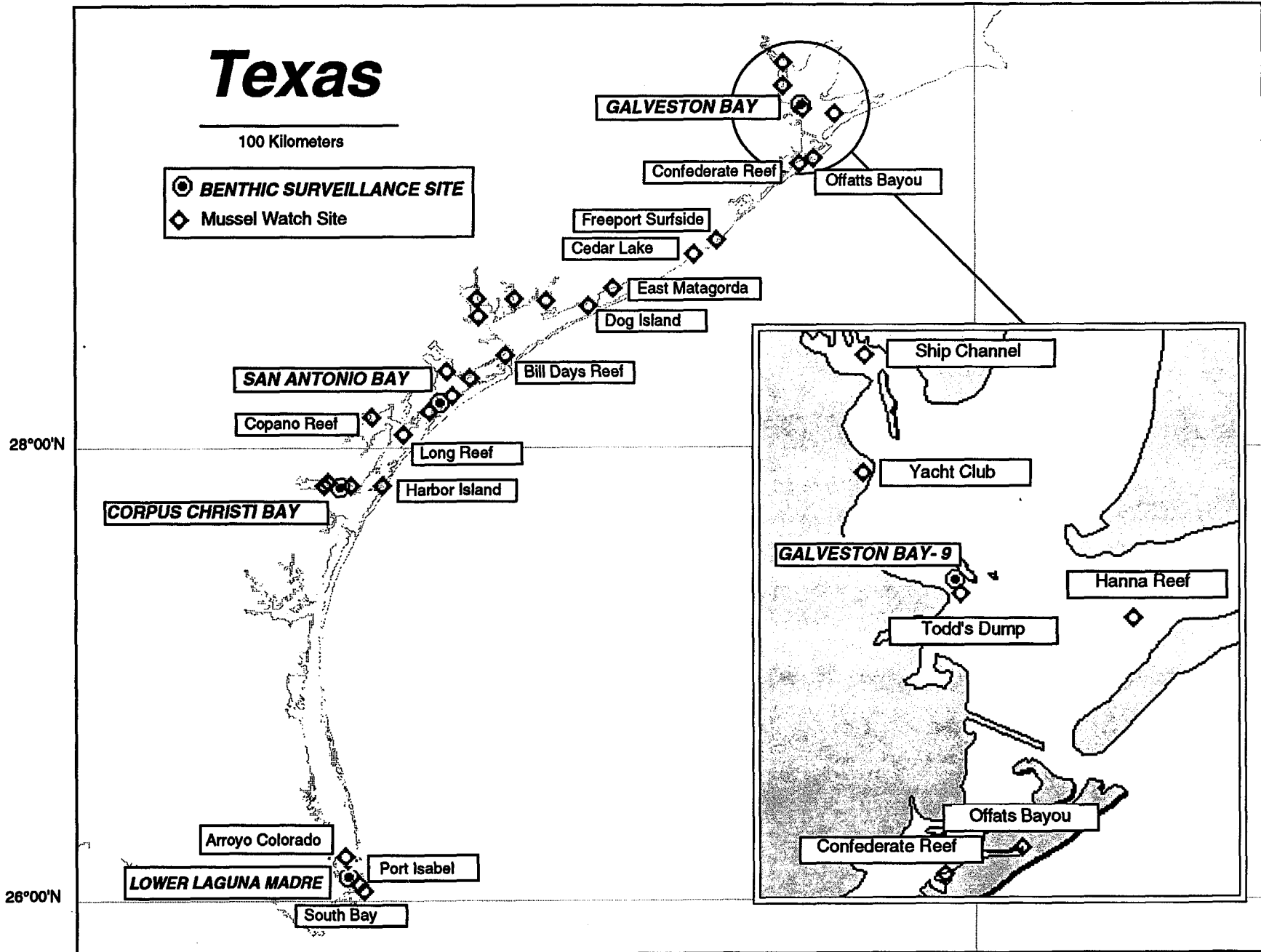
98°00'W

94°00'W

Texas

100 Kilometers

- ⊙ **BENTHIC SURVEILLANCE SITE**
- ◆ **Mussel Watch Site**



98°00'W

94°00'W

Texas

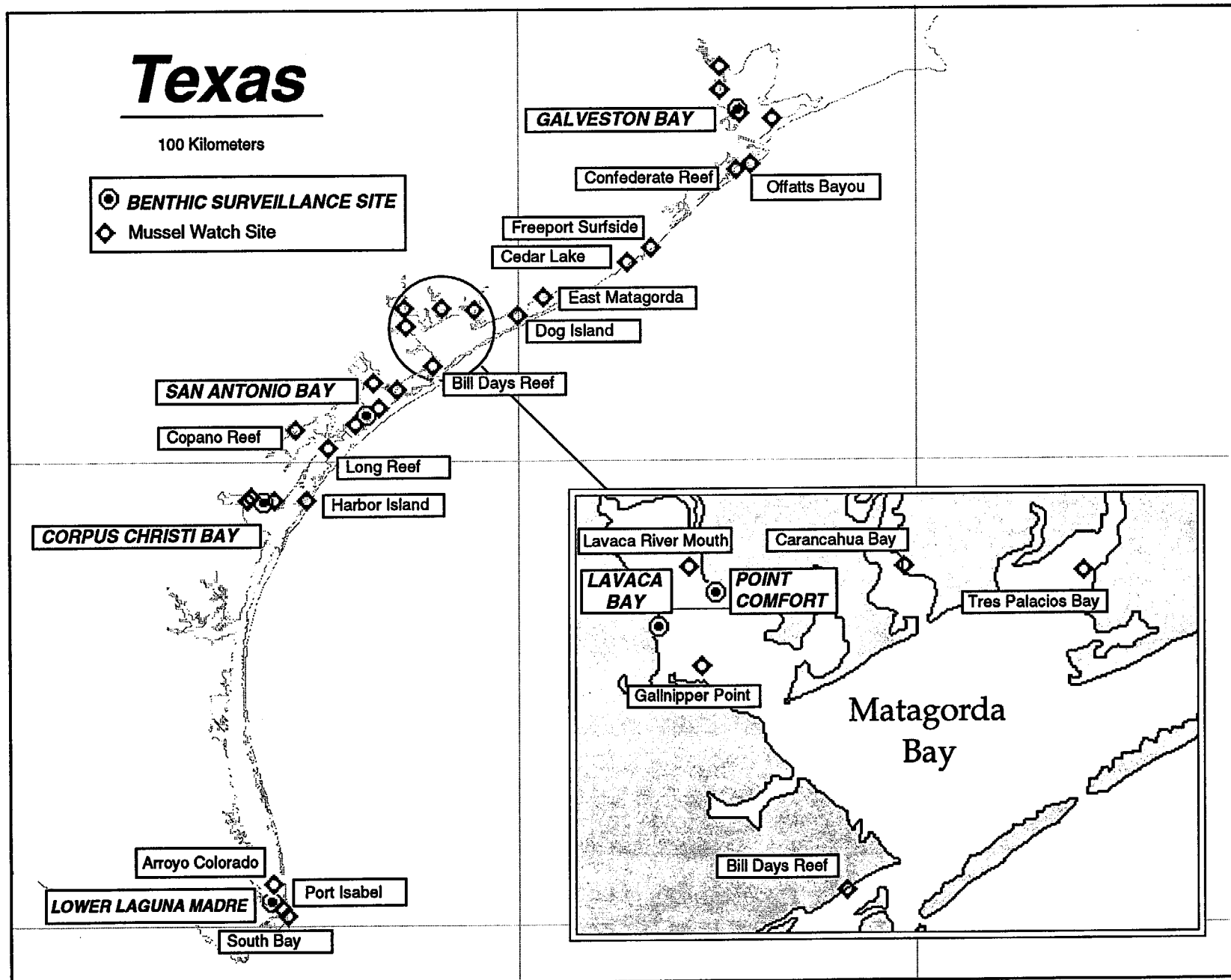
100 Kilometers

⊙ **BENTHIC SURVEILLANCE SITE**

◆ **Mussel Watch Site**

28°00'N

26°00'N



98°00'W

94°00'W

Texas

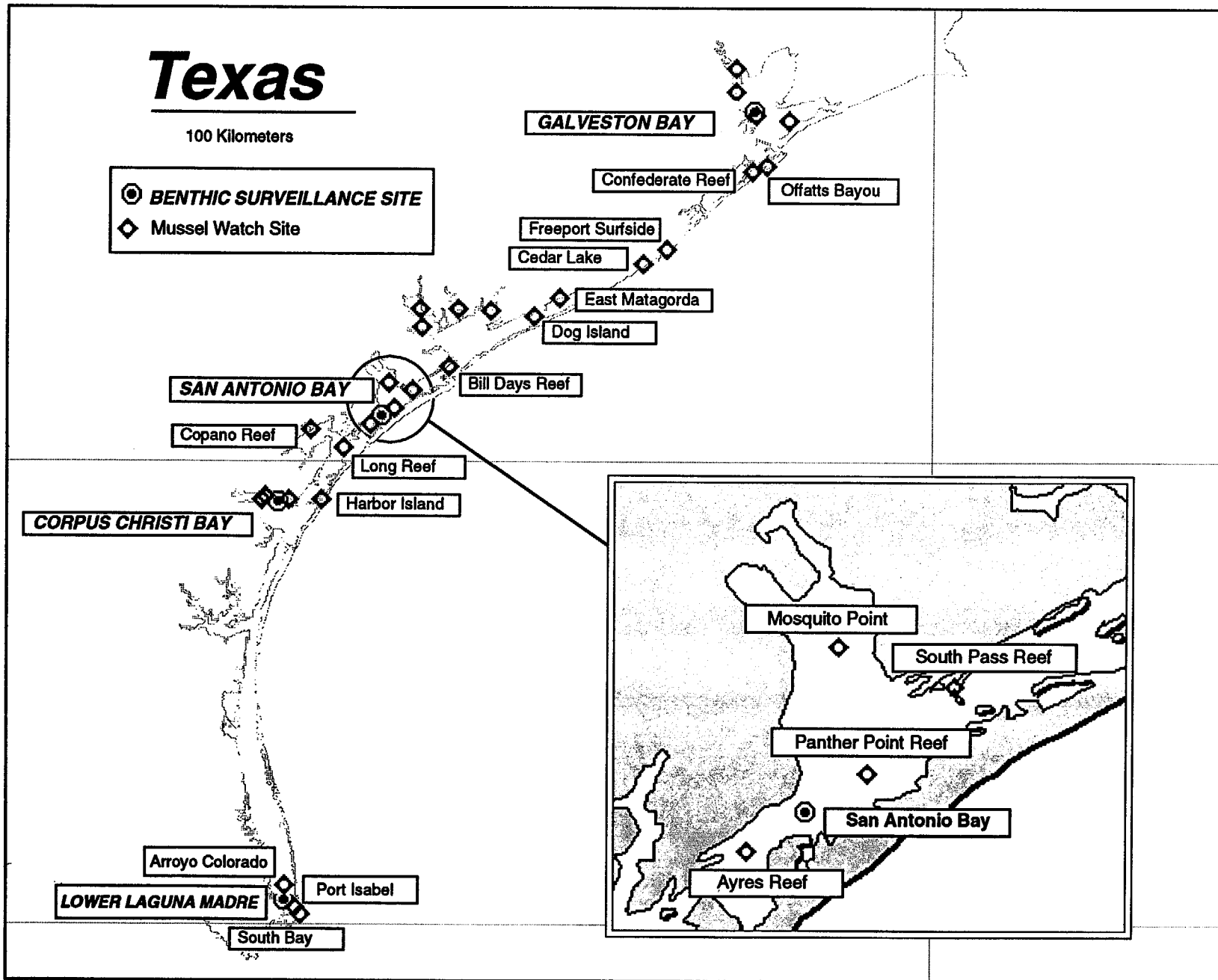
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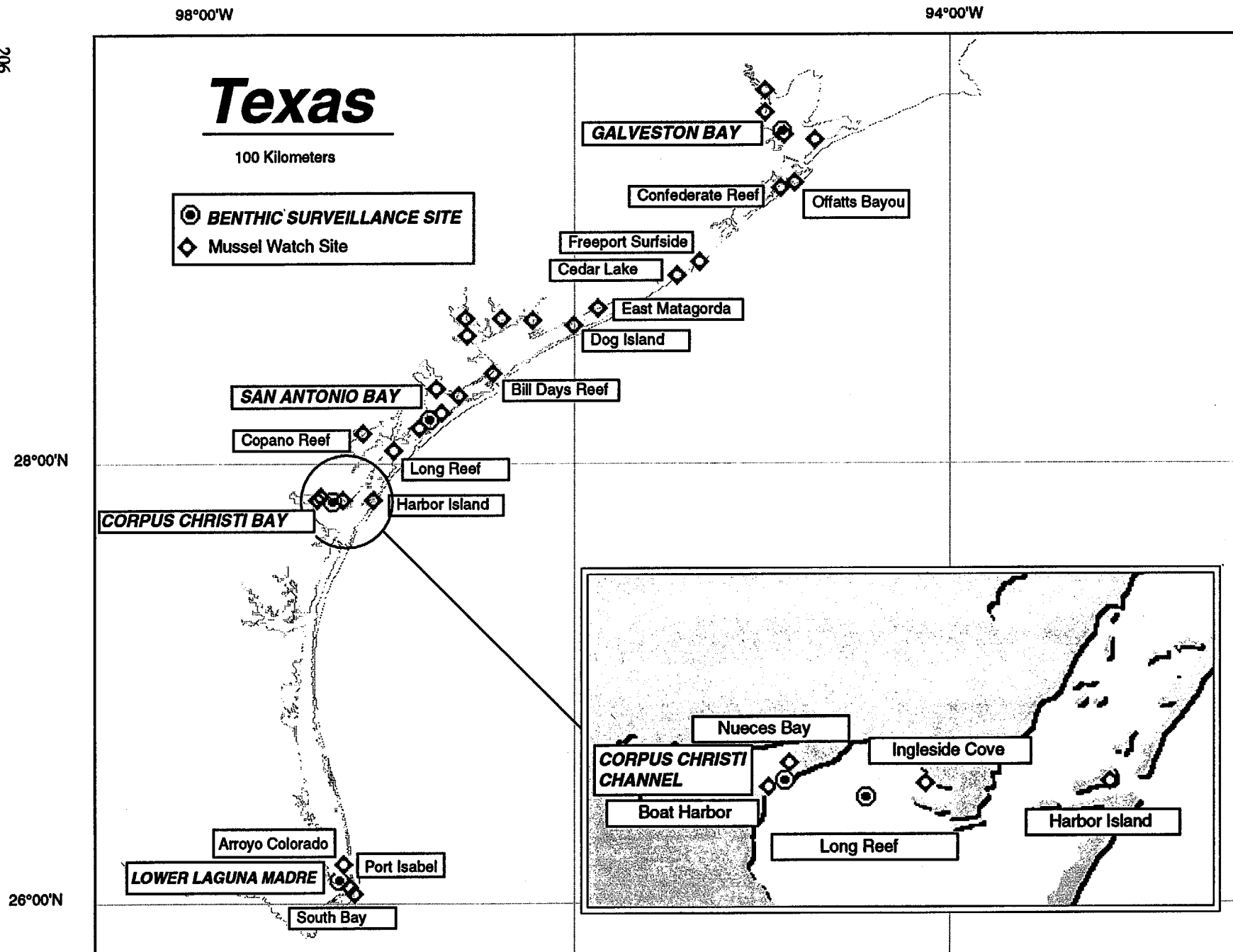
⊙ **BENTHIC SURVEILLANCE SITE**

◆ **Mussel Watch Site**

28°00'N

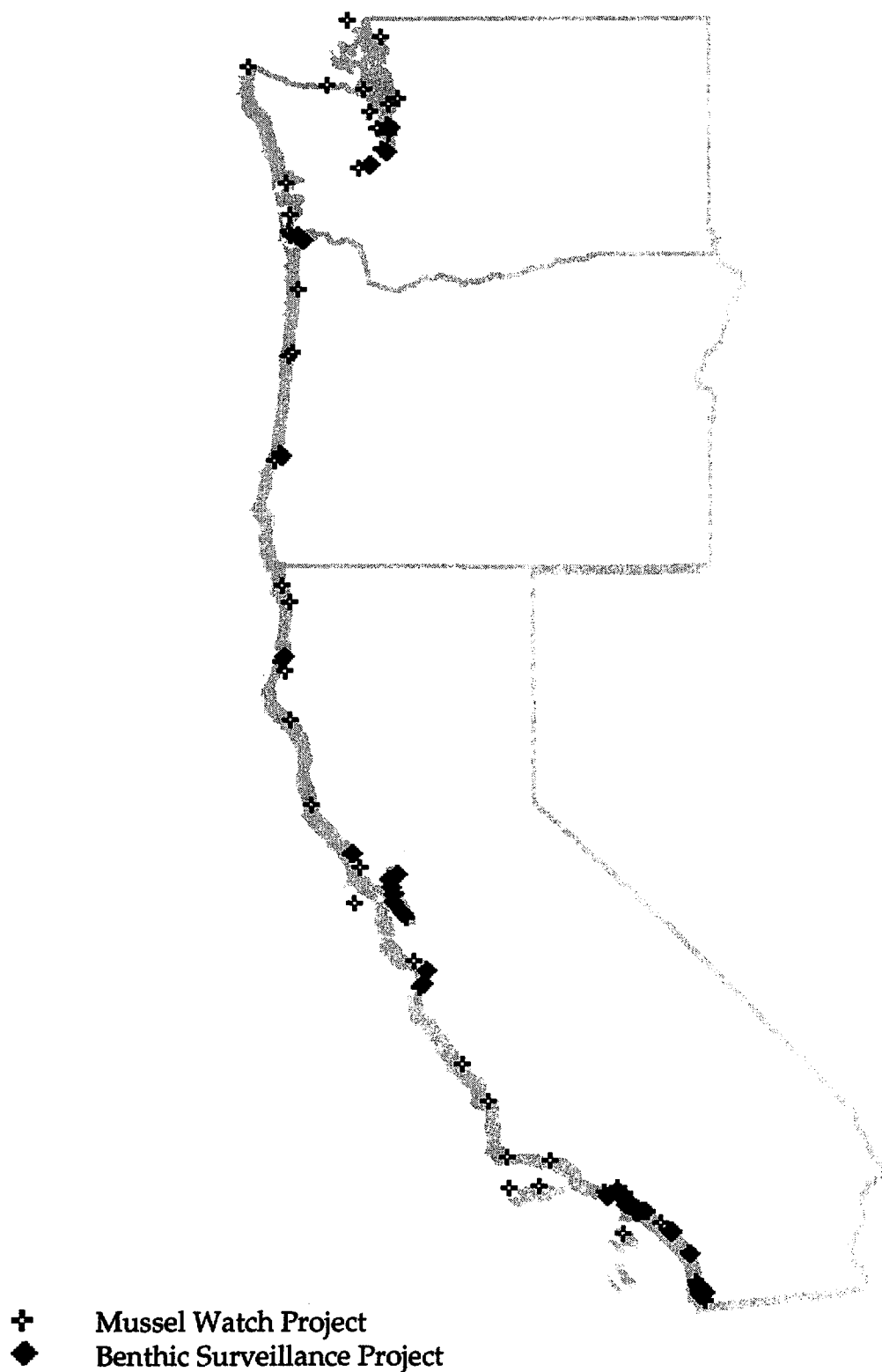
26°00'N





NATIONAL STATUS & TRENDS PROGRAM

Pacific Region



CALIFORNIA SITES

Mussel Watch

SITE - Imperial Beach, North Jetty, CA

SITE CODE - IBNJ

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 32° 35.25'N (Bivalves)
117° 07.95'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 18772 (NAD 1927)

SITE DESCRIPTION - Imperial Beach is located south of San Diego and 3.5 miles north of the U.S./Mexico border. The sampling site is adjacent to a residential beach community, a U.S. Naval Communications Center, and a YMCA camp. Mussels are collected from the northernmost jetty.

Travel Interstate 5 to San Diego (Imperial Beach) to Route 75 (Palm Drive). Take Palm Drive to the west and turn right (north) on Seacoast Drive. Park at the intersection of Seacoast Drive and Carnation Avenue, adjacent to the YMCA camp.

Follow the path to the beach, between the houses and the YMCA camp. The site is at a boulder-type jetty projecting westward on the north end of the beach adjacent to the YMCA Camp. The site center is at the highest rock, located on the jetty approximately three-quarters of the way out. Mussels are situated on the north and south sides of the jetty, within 10-25 meters of the site center.

Sediments are collected within 1 nautical mile of the jetty. The nearest boat launch is on Shelter Island (Point Loma). Sediments were previously collected at a water depth of 18 meters.

The site acronym was IBIB for sampling years 1986-1989.

SAMPLING METHODS - Intertidal, hand collection.

SITE - San Diego Bay, Coronado Bridge, CA

SITE CODE - SDCB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 32° 41.21'N
117° 09.53'W

WATER DEPTH - 0.75 meters

LOCATED ON NOS CHART - 18773 (NAD 1983; April 20, 1991)

CALIFORNIA SITES

SITE DESCRIPTION - The site is a large concrete bridge (Coronado Bridge) between downtown San Diego and Coronado Island. The bridge is 46-60 meters high and is supported by 20 concrete struts with large rectangular bases. Each piling is identified by a painted number.

Travel Interstate 5 to San Diego. Take the Laurel Street exit west to Harbor Drive. Travel past the airport, turn left (south) onto Rosecrans Street, continue to the intersection of Shelter Island Drive and turn left (east) toward the Shelter Island marina.

Launch the boat from Shelter Island and head east for 0.2 nautical miles to G "19", then east-northeast for 1.25 nautical miles to G "21." Turn southeast for 1.5 nautical miles to G "23," and continue for 1.2 nautical miles to the center of the bridge. Boat travel time is approximately 20 minutes. The site center is Piling #10. The discrete mussel stations are to the east and west, at piling numbers 9, 11, and 12.

Sediments are collected in 4-11 meters of water .

SAMPLING METHODS - Intertidal, hand collection.

SITE - San Diego Bay, Harbor Island, CA

SITE CODE - SDHI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 32° 43.49'N (Bivalves)
117° 11.68'W

WATER DEPTH - 1 meter

32° 43.14'N (Sediments)
117° 11.56'W

LOCATED ON NOS CHART - 18773 (NAD 1983; April 20, 1991)

SITE DESCRIPTION - Harbor Island is located at the northern end of San Diego Harbor, just south of the San Diego Airport and north of North Island.

Travel Interstate 5 to San Diego. Take the Laurel Street exit along the perimeter of the airport to Harbor Drive. Approximately 1.5 miles along Harbor Drive, take the Harbor Island Drive exit. At the Harbor Island rotary, head east and park in the first designated area east of the rotary. The site is located on the southern side of Harbor Island, approximately one-half mile west of Reuben's Restaurant.

The site center is the first palm tree east of the rotary. Mussels are located near the base of the cobbled embankment, between two storm drains (approximately 100 meters). Discrete stations cover a wide area due to the scarcity of specimens. Specimens were found in small clusters of 3-6 individuals.

CALIFORNIA SITES

Sediment collections are conducted near CM #21 (green). A boat may be launched from Shelter Island, Point Loma.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Point Loma, Lighthouse, CA

SITE CODE - PLLH

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 32° 40.90'N (Bivalves)
117° 14.92'W

WATER DEPTH - 1 meter

32° 37.00'N (Sediments)
117° 15.70'W

LOCATED ON NOS CHART - 18773 (NAD 1983)

SITE DESCRIPTION - The site is located on the Point Loma peninsula in southwestern San Diego. During the 88-89 sampling period, the site was relocated approximately 1 nautical mile north of the lighthouse to a site at the base of the bluffs near the Point Loma Wastewater Treatment Plant.

Travel Interstate 5 to San Diego, take Route 8 west (Ocean Beach Freeway) to Nimitz Boulevard and go south on Nimitz Boulevard to Rosecrans Street (Route 209). Travel southwest on Rosecrans Street to the vicinity of Shelter Island, turn right (west) on Canon Street (Route 209) and head up the hill turning left (south) on Catalina Boulevard (Route 209). Prior to the Cabrillo National Monument Museum, take the right fork down to the lighthouse. On the lower road, travel north to the Pt. Loma Wastewater Treatment Plant. Check in at the administration building prior to sampling. From the Administration Building, continue on the road taking the left fork (west) to the lower road. The site center is located on the cliff, adjacent to the "turnabout" at the end of the road. Sampling stations are situated on the mesa to the south, at the base of the cliffs.

The sediment site water depth is approximately 52 meters.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

SITE - Mission Bay, Ventura Bridge, CA

SITE CODE - MBVB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 32° 46.07'N (Bivalves) **WATER DEPTH** - 0.75 meters
117° 14.47'W

LOCATED ON NOS CHART - 18765 (NAD 1927)

SITE DESCRIPTION - This site is located in the Mission Bay Channel at the base of the Ventura Bridge.

Travel Interstate 5 to San Diego. Take Sea World Drive (west) to Ingrahm Street. Go approximately one-quarter mile and take a left (west) onto Dana Landing Road. The Dana Landing Boat Ramp is located on the south-central side of Mission Bay. Launch the vessel from Dana Landing and head westward toward the bridge. Distance from the boat launch to the Ventura Bridge sampling site is less than 0.5 nautical mile.

The site center is the fourth concrete piling from the east. Specimens are collected from discrete stations (pilings) by one individual while the second member of the team stabilizes the vessel against the piling.

SAMPLING METHODS - Intertidal, hand collection. A boat is required.

SITE - La Jolla, Point La Jolla, CA

SITE CODE - LJLJ

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 32° 51.05'N (Bivalves) **WATER DEPTH** - 1 meter
117° 16.15'W
32° 48.75'N (Sediments)
117° 19.72'W

LOCATED ON NOS CHART - 18765 (NAD 1927)

SITE DESCRIPTION - The site is located in the La Jolla Cove area of northwest San Diego.

Travel Interstate 5 to San Diego. From the north, take La Jolla Village Drive (west), from the south, take Adrath Road (west) to Torrey Pines Road (south). Take a right (west) onto Coast Boulevard and park in the vicinity of the Ellen B. Scripps Park. Walk over to the La Jolla Cove Lifeguard Station, and notify the duty lifeguard of the collection. From the lifeguard station, walk north on Coast Boulevard along the wooden fence for a distance of approximately 100 meters. Walk through the gate and down the path toward "Glove Rock" on the point of the cliff. Climb down the cliff to the mesa.

CALIFORNIA SITES

The site center is situated on the mesa near to base of the cliff. Discrete sampling stations are located on the western edge of the mesa.

For sediment collection, launch a boat from Dana Landing in Mission Bay.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Oceanside, Municipal Beach Jetty, CA

SITE CODE - OSBJ

TARGET SPECIES - *Mytilus edulis* (blue mussel)
Mytilus californianus (California mussel)

SITE CENTER COORDINATES - 33° 12.11'N (Bivalves)
117° 23.56'W

WATER DEPTH - 0.7 meters

33° 12.80'N (Sediments)
117° 28.00'W

LOCATED ON NOS CHARTS - 18774 and 18740 (NAD 1927)

SITE DESCRIPTION - The site is located on the Oceanside Municipal Beach Jetty, approximately two-thirds of a mile south of the entrance to the Oceanside Small Craft Harbor. Travel Interstate 5 to Oceanside and take the Oceanside exit to Harbor Drive (west). Take the left fork (south) and travel westward toward the beach parking area.

The sampling site is at the boulder type jetty projecting southwest from the beach. The site center is located on the jetty approximately three-quarters of the way out. Stations 1 and 3 are located on the western side of the jetty and Station 2 is located on the eastern side. Both *M. edulis* and *M. californianus* are present at this location. *M. edulis* was the primary species through 1990. Because of the few *M. edulis* mussels present, *M. californianus* was defined as the primary species in 1991.

A public launch ramp is available in Oceanside Harbor for boat launching for the sediment collections.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

SITE - Santa Catalina Island, Bird Rock, CA

SITE CODE - SCBR

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 33° 27.10'N (Bivalves)
118° 29.20'W

WATER DEPTH - 0.5 meters

33° 26.55'N (Sediments)
118° 29.48'W

LOCATED ON NOS CHART - 18746 (NAD 1927)

SITE DESCRIPTION - Santa Catalina Island can be accessed by taking the Catalina Express Ferry to Two Harbors (not Avalon Beach). The sampling site is located on Bird Rock, which is approximately 1 mile outside of the harbor. Bird Rock is accessible only by boat.

The site center is located in the middle of the mesa on the northwest side of Bird Rock. If the mussel population is too sparse for collection, inspect mussel beds on the west side of the island, within 100 meters.

Sediments are collected in the vicinity of Bird Rock in approximately 54 meters of water. Anchoring may not be possible, therefore, collection may be conducted while the boat is adrift.

SAMPLING METHODS - Intertidal, hand collection. A boat is required.

SITE - Newport Beach, West Jetty, CA

SITE CODE - NBWJ

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 33° 35.48'N (Bivalves)
117° 52.77'W

WATER DEPTH - 1 meter

33° 35.12'N (Sediments)
117° 53.67'W

LOCATED ON NOS CHARTS - 18746 and 18740 (NAD 1927)

SITE DESCRIPTION - The site is located on the west jetty at the Balboa Channel Entrance to Newport Bay in Newport Beach. The sampling site is the boulder-type jetty projecting in a southerly direction on the west side of the channel. The site center is the tenth pole out on the jetty. The sampling stations are situated on the west side of the jetty. A public launch ramp is available in the Newport Dunes Aquatic Park for boat launching during sediment collections.

CALIFORNIA SITES

Take the San Diego Freeway (405) to Newport Boulevard (Route 55) south. Continue on Newport Boulevard through Newport Beach and out to Balboa Island where it runs into Balboa Boulevard. From Balboa Boulevard, take Ocean Boulevard (south) along the shore to the intersection at Channel Boulevard. Park on Channel Boulevard and walk out to the jetty through Channel Park.

In 1986-1988 the acronym for this site was NBBC.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Anaheim Bay, West Jetty, CA

SITE CODE - ABWJ

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 33° 43.93'N (Bivalves)
118° 06.02'W

WATER DEPTH - 1 meter

33° 44.27'N (Sediments)
118° 07.81'W

LOCATED ON NOS CHART - 18749 (NAD 1927)

SITE DESCRIPTION - The Anaheim Bay Jetty is located adjacent to Seal Beach and the U. S. Naval Weapons Station.

Take the San Diego Freeway (Route 405) to Studebaker Road. Head south on Studebaker Road and turn right (west) onto Westminster Avenue. Continue on Westminster Avenue and turn left (south) on Pacific (south) onto Seal Beach Boulevard, which runs into Ocean Avenue and parallels the coast. Take a left (west) onto Neptune Avenue, which dead-ends at the beach. Walk out to the beach and around the fence at the shore end of the jetty. The site is a boulder-type jetty. The site center is the first very low profile (barely above the boulders) telephone-pole-type timber. All stations are located on the west side of the jetty.

For sediment collection, a boat may be launched from the public ramp at the south end of Golden Shore Avenue.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

SITE - Long Beach, Long Beach Breakwater, CA

SITE CODE - LBBW

TARGET SPECIES - *Mytilus edulis* (blue mussel)
Mytilus californica (California mussel)

SITE CENTER COORDINATES - 33° 43.42'N (Bivalves)
118° 10.45'W

WATER DEPTH - 0.5 meters

LOCATED ON NOS CHARTS - 18746 (NAD 1927; June 28, 1986), 18751 (NAD 1927)

SITE DESCRIPTION - The site is located on the Long Beach Breakwater. This breakwater is the easternmost of three breakwaters that protect the Port of Los Angeles/Long Beach.

The most convenient boat launch ramp is located at Cabrillo Beach in San Pedro Harbor. Travel the San Diego Freeway (Route 405) to the Torrance vicinity in Los Angeles. Exit onto the Harbor Freeway (Route 110 south) and travel approximately 5 miles to the Gaffey Street Exit in San Pedro. Turn left on 27th Street and proceed to Pacific Street. Turn right (south) on Pacific Street. Continue past Fort MacArthur, turn left (east) onto Stephen M. White Drive, and bear left into the Cabrillo Beach area. The boat launch is in the northeast corner of Cabrillo Beach.

From the boat launch, head northeast through the channel and beyond the "No Wake Zone." Once out of the zone, head in an easterly direction for approximately 5 nautical miles to the Long Beach Breakwater.

The sampling site is approximately 400 meters east of the western edge of the breakwater (FI R "2"). The site center is 25 meters off the north face of the breakwater. The discrete mussel stations are located on breakwater boulders, to the east and west of the site center, within 30 meters. Mussels are present in clusters. Westerly clusters, closest to the harbor entrance, contain increasing numbers of *M. californianus*. The ocean side of the breakwater (south face) contains dense populations of *M. californianus*. Since this site was established the *M. edulis* population has declined significantly; *M. californianus* has been the target species since 1992.

Sediment sampling is conducted within 1 nautical mile of the bivalve site in 15 meters of water. Sediments consist of very soft mud.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

SITE - San Pedro Harbor, Fishing Pier, CA

SITE CODE - SPFP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 33° 42.42'N (Bivalves)
118° 16.43'W

WATER DEPTH - 0.5 meters

33° 42.62'N (Sediments)
118° 16.60'W

LOCATED ON NOS CHARTS - 18749 and 18751 (NAD 1927)

SITE DESCRIPTION - The San Pedro Fishing Pier is located at Cabrillo Beach in the southwestern corner of Los Angeles Harbor.

Travel the San Diego Freeway (Route 405) to the Torrance vicinity in Los Angeles. Exit onto the Harbor Freeway (Route 110 South) and travel approximately 5 miles to the Gaffey Street Exit in San Pedro. Turn left (east) on 27th Street and proceed to Pacific Street. Turn right (south) on Pacific Street. Continue past Fort MacArthur, turn left (east) onto Stephen M. White Drive, and bear left into the Cabrillo Beach area. The boat launch is in the northeast corner of Cabrillo Beach. From the boat launch, head northeast through the channel and beyond the "No Wake Zone." Once out of the zone, head in a southeasterly direction for 0.5 nautical miles to the San Pedro Fishing Pier. The sampling site is the north face of the pier to the left (east) of the pier building. The site center is the seventh concrete piling from the east end of the pier. Discrete mussel stations are the fifth, sixth, and ninth pilings from the east end of the pier.

Sediments are collected in the same general vicinity, but northward away from the pier.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Palos Verdes, Royal Palms State Park, CA

SITE CODE - PVRP

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 33° 43.10'N (Bivalves)
118° 19.35'W

WATER DEPTH - 0.75 meter

33° 42.65'N (Sediments)
118° 21.00'W

LOCATED ON NOS CHART - 18746 (NAD 1927)

CALIFORNIA SITES

SITE DESCRIPTION - The sampling site is located on the Palos Verdes/San Pedro "Peninsula" in the Royal Palms State Park, west of Point Fermin.

Travel the San Diego Freeway (Route 405) to the Harbor Freeway (Route 110 south), to the Gaffey Street exit in San Pedro. Take Gaffey Street to the coast (about 5 miles) and turn right (west) onto Paseo Del Mar. Continue west on Paseo Del Mar for approximately 1.5 miles; the entrance to Royal Palms State Park is on the left, just east of the Western Avenue intersection.

The sampling site is the large rock outcrop directly offshore (south) from the lifeguard tower. The site is accessible at low tide. The site center is a large crag in the center of the offshore rock. The sampling stations are situated on the western and shoreward sides of the northern half of the site. Waves are generally hazardous; use caution and wear rain gear or a wetsuit.

Launch a boat from Cabrillo Beach ramp for sediment collection. The nearest boat ramp is at Cabrillo Beach in San Pedro Harbor (see Site SPFP above for directions).

SAMPLING METHODS - Intertidal, hand collection.

SITE - Redondo Beach, Municipal Jetty, CA

SITE CODE - RBMJ

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 33° 49.91'N (Bivalves)
118° 23.50'W

WATER DEPTH - 0.3 meter

33° 49.41'N (Sediments)
118° 24.86'W

LOCATED ON NOS CHART - 18744 (NAD 1927; June 21, 1986)

SITE DESCRIPTION - The site is located on the municipal beach jetty of Redondo Beach in southeastern Santa Monica Bay.

Travel the Pacific Coast Highway (Route 1) to Redondo Beach. At the intersection of Pacific Coast Highway and Topaz Street, turn west onto Topaz Street and continue to the intersection of Esplanade Street (parallel to the beach). Park in the vicinity of 703 Esplanade Street.

Hike down to the beach via the alley and steps next to 703 Esplanade Street. The sampling site is the solitary jetty projecting westward from the beach, in front of the lifeguard station. The site center is on the jetty approximately halfway out. Mussels are present on both sides of the jetty. Discrete mussel stations are situated on the south side of the jetty, providing some protection from rough surf during sample collection.

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The sediment site center is spar buoy W Or located 1.5 nautical miles southwest of the jetty. Sediments consist of mud and fine sands collected from 40 meters of water. A boat may be launched from Marina Del Rey, 9 nautical miles up the coast.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Marina Del Rey, South Jetty, CA

SITE CODE - MDSJ

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 33° 57.68'N (Bivalves)
118° 27.42'W

WATER DEPTH - 0.7 meter

33° 59.49'N (Sediments)
118° 31.97'W

LOCATED ON NOS CHART - 18744 (NAD 1927)

SITE DESCRIPTION - The site is located on the south side of the South Jetty at the entrance channel to Marina Del Rey Harbor.

Travel the San Diego Freeway (Route 405) to the Marina Freeway (Route 90 west), turn left (southwest) onto Culver Boulevard and continue to the end. Turn right (north) onto Pacific Street, continue to the end and park in the lot near the pedestrian bridge.

Walk over the bridge and turn left (west) onto the jetty. The site center is the end of the paved walkway (about two-thirds the length of the jetty). Discrete mussel stations are situated on the south side of the jetty, on the north shore of Ballona Creek.

A boat may be launched from the public ramp in Basin H of Marina Del Rey. Sediments are in approximately 29 meters of water.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

SITE - Las Tunas Beach, Santa Monica Bay, CA

SITE CODE - TBSM

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 34° 02.33'N (Bivalves)
118° 35.85'W

WATER DEPTH - 0.5 meters

34° 01.60'N (Sediments)
118° 33.73'W

LOCATED ON NOS CHART - 18744 (NAD 1927)

SITE DESCRIPTION - The site is located on Las Tunas State Beach, in northern Santa Monica Bay.

Travel the Pacific Coast Highway (Route 1) to just west of Tunas Canyon Road. The beach is not indicated by any signs, but is across the highway from a series of mailboxes; look for address #19449 Pacific Coast Highway. Park in the unpaved area above the beach. The east side of the beach is bordered by a white house.

The sampling site is located on the east side of the beach. The site center is the break in the 1-meter-high concrete wall. The discrete mussel stations are the rocks situated south and west of the site center. Sample collectors must wade out to the sampling stations.

The sediment site center is located approximately 0.75 nautical miles offshore of the bivalve sampling site in 22 meters of water. Samples consist of predominantly mud and some fine sands. The nearest boat launch is in Marina Del Rey, 8 nautical miles southeast of the site.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Point Dume, CA

SITE CODE - PDPD

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 34° 00.08'N (Bivalve)
118° 48.48'W

WATER DEPTH - 1 meter

33° 59.90'N (Sediment)
118° 46.94'W

LOCATED ON NOS CHART - 18744 (NAD 1927)

CALIFORNIA SITES

SITE DESCRIPTION - The Point Dume site is located at the east end of Zuma Beach in Malibu. Travel the Pacific Coast Highway (Route 1) to the Zuma Beach, Westward Beach Road Entrance. Park in the easternmost lot and walk southeast across the beach.

The site center is the level rock with the 1-foot vertical steel pipe, located below the sheer cliff. The discrete mussel stations are situated in the surf zone, 6 meters below the site center.

A boat may be launched in Marina Del Rey, 15 nautical miles south of the site. Sediments are in 54 meters of water.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Santa Cruz Island, Fraser Point, CA

SITE CODE - SCFP

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 34° 03.59'N (Bivalves)
119° 55.25'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 18721 (NAD 1927)

SITE DESCRIPTION - Santa Cruz Island is owned by The Nature Conservancy. The sampling site is most accessible by plane. The Channel Islands Aviation, Inc. has access to a dirt runway at Forney Cove, approximately one-half mile east of the sampling site. The site is located in an adjacent cove on the northeast corner of Fraser Point on Santa Cruz Island.

Follow the dirt road heading west from the runway, and turn north toward the cove on the north side of Fraser Point. Mussels are located on the mesa in the northeast corner of the cove.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

SITE - San Miguel Island, Tyler Bight, CA

SITE CODE - SANM

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 34° 01.68'N (Bivalves)
120° 25.16'W

WATER DEPTH - 1 meter

LOCATED ON NOS CHART - 18727 (NAD 1983)

SITE DESCRIPTION - San Miguel Island is the westernmost of the four Santa Barbara Channel Islands. The island is part of the Santa Barbara Channel Marine Sanctuary. Two-thirds of the island is used by the U.S. Navy as a missile test center. Transportation to the island is possible by chartered plane.

The sampling site is located on the southwest side of the island at the western edge of Tyler Bight. Tyler Bight is approximately 1.5 nautical miles west of the missile-danger boundary. The site is a 30-minute hike from the air strip. The site center is the north head of the rocks on the eastern side of the beach between Tyler Bight and Judith Rock. The sampling stations are on the southern portions of these rocks.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Santa Barbara, Pt. Santa Barbara, CA

SITE CODE - SBSB

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 34° 23.75'N (Bivalves)
119° 43.72'W

WATER DEPTH - 1.3 meters

34° 23.15'N (Sediments)
119° 43.22'W

LOCATED ON NOS CHARTS - 18725 (NAD 1983)

SITE DESCRIPTION - The site is located approximately 0.35 nautical miles (650 meters) west of the Santa Barbara Lighthouse and 100 meters east of the beach stairs below Mesa Lane.

Travel Route 101 to Santa Barbara. Exit onto Route 225 (Cabrillo Street, Castillo Street, Cliff Road) which heads westward along the coast. At the intersection of Cliff Road and Mesa Lane, turn left (south). Proceed to the intersection of Mesa Lane and Edgewater Drive and park.

From the end of Mesa Lane, hike down the 300-step staircase to the beach. The site center is approximately 100 meters east of the stairs. It is indicated by a cluster of bleached-tarred rocks

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at the base of the bluff near a partially buried black-plastic pipe 6 inches in diameter. Discrete stations are situated east and south of the site center.

For sediment collection, launch a boat from the public ramp in Santa Barbara Harbor. The sediment site is a narrow band of sediment located off of the lighthouse inside the 36-meter contour.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Point Conception, CA

SITE CODE - PCPC

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 34° 26.70'N (Bivalves)
120° 27.20'W

WATER DEPTH - 0.8 meters

34° 26.56'N (Sediments)
120° 26.00'W

LOCATED ON NOS CHART - 18721 (NAD 1927)

SITE DESCRIPTION - The site is located on the Bixby Ranch Co. property at Point Conception. Travel Route 101 west of Santa Barbara. Beyond the Gaviota Pass (Las Cruces), take a left (west) onto Pacific Coast Highway (Route 1). Proceed for approximately 15 miles along the Pacific Coast Highway, then take a left (south) onto Jalama Road. Travel approximately 13 miles along this winding road to the Bixby Ranch gate, just before the railroad tracks and the Jalama Beach County Park. The Bixby Ranch gate is white with a large "C" (Cojo) on it. As with a number of other sites (see Introduction) access is restricted; an application for access is required.

From the ranch gate, follow the road for approximately 5 miles to the Union Oil tanks, just south of the Point Conception Lighthouse. Drive very slowly so as not to disturb the livestock. At the end of the paved road, turn left (south) onto the dirt road and park next to the knoll. From the north end of the knoll, hike down the cliff. A long rope situated near the path will assist in the descent.

The site center is the first large rock outcrop east of the cliff-descent point. Discrete mussel sampling stations are situated south and west of the site center.

For sediment sampling, a small boat can be launched from the Gaviota Pier hoist. Pay particular attention to the weather, as winds regularly exceed 30 knots at Point Conception. The sediment site center is southeast of the bivalve sampling site, and east of Government Point in an area called the Cojo Anchorage.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

SITE - San Luis Obispo, Point San Luis, CA

SITE CODE - SLSL

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 35° 09.64'N (Bivalves)
120° 45.26'W

WATER DEPTH - 1 meter

35° 09.72'N (Sediments)
120° 44.12'W

LOCATED ON NOS CHART - 18704 (NAD 1983)

SITE DESCRIPTION - The sampling site is located in the southwestern corner of Port San Luis, adjacent to the beachward end of the breakwater. The sediment site was relocated 0.5 nautical miles to the southwest of the former sediment site to within 300 meters of the bivalve site.

Travel Pacific Coast Highway (Route 101) to the Avila Beach exit. Follow the road out to the Port San Luis Wharf, beyond the Diablo Canyon Nuclear Power Plant. Park in the lot next to the wharf by the Port San Luis Harbor Maintenance building. Walk beyond the fence and along the bluffs for about one-half mile to the sandy beach in the vicinity of the northwest end of the breakwater. Wading through the surf and hiking over rock outcrops is required.

The site center is the concrete platform on top of the large rock outcrop in the midst of the sandy beach. The discrete mussel stations are the remnants of concrete pilings between the site center and the surf.

For sediment sampling, launch a boat from the hoist on the wharf. The sediment site is in the vicinity of Smith Island and the Atlas Rock Buoy. Sediments are fine sands and silt in 6 meters of water.

SAMPLING METHODS - Intertidal, hand collection.

SITE - San Simeon, San Simeon Pt., Hearst Ranch, CA

SITE CODE - SSSS

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 35° 38.20'N
121° 11.70'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHART - 18700 (NAD 1983)

SITE DESCRIPTION - San Simeon Point is located on the Hearst Corporation property.

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Travel Highway 101 to San Luis Obispo. Take the Pacific Coast Highway (Route 1) north to San Simeon. Continue to the north side of town and turn left (west) into the William Randolph Hearst Memorial State Park. Park adjacent to the beach park.

From the beach park, it is a 30-minute hike to the sampling site. Hike westward along the beach for approximately 200 meters, then take the trail up the cliff. Walk along the wire fence and, as the trail indicates, crawl under the fence and proceed westward along the dirt road/trail to where it ends on a cliff overlooking a sandy cove. From the southwest end of the cliff, follow the trail down to the rocky mesa. The site center is at the base of the trail in the east end of the cove. The discrete mussel stations are east and south of the site center.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Pacific Grove, Lovers Point, CA

SITE CODE - PGLP

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 36° 37.55'N (Bivalves)
121° 54.91'W

WATER DEPTH - 1 meter

36° 37.65'N (Sediments)
121° 54.15'W

LOCATED ON NOS CHART - 18685 (NAD 1983)

SITE DESCRIPTION - Lovers Point is located on the northeast corner of the Monterey Peninsula.

Travel Pacific Coast Highway (Route 1) to Monterey. Exit to Munras Avenue and travel toward Cannery Row and the Monterey Bay Aquarium. Continue along Ocean View Boulevard and park at the seawall west of Lovers Point Park.

The sampling site is located in the northeast corner of the park, beyond the rocky hill. The site center is the step-like area at the base of the rock cluster (dry area) on the park side. The sampling site is split by a narrow channel. The discrete mussel stations are on the north and east sides of the channel. The channel is subjected to intense waves and surges.

For sediment collections, use the boat ramp adjacent to the U. S. Coast Guard Wharf in Monterey Harbor. Sediment was collected in 39 meters of water, east of the bivalve site.

SAMPLING METHODS - Intertidal, hand collection.

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SITE - Monterey Bay, Moss Landing Beach, CA

SITE CODE - MBML

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 36° 48.09'N (Bivalves)
121° 47.35'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 18685 (NAD 1983)

SITE DESCRIPTION - The site is at a rocky outcrop near the Moss Landing Marine Laboratory pier, 400 meters south of the harbor entrance and 3.25 nautical miles north of the mouth of the Salinas River.

Travel Highway 101 to Salinas. Exit onto Route 183 and travel northwest to Castroville. Beyond Castroville, continue on Route 183 to the intersection of Pacific Coast Highway (Route 1). Travel north on Route 1 and turn west into the Moss Landing Harbor. Continue west over the wooden bridge and turn right (north). Park the vehicle near the marine laboratory and hike out to the beach. The sampling site is the rock outcrop in the surf zone, north of the Moss Landing Marine Laboratory pier. The site center is in the midst of neatly cut beach-level pilings (remnants of an old pier) adjacent to the rock outcrop. Discrete mussel stations are west of the site center. Sampling stations may be sanded over due to storm activity.

Sediment sampling is conducted offshore in the vicinity of the bivalve site.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Monterey Bay, Point Santa Cruz, CA

SITE CODE - MBSC

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 36° 57.20'N
122° 01.45'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHART - 18685 (NAD 1983)

SITE DESCRIPTION - The sampling site is located in a cove north of Point Santa Cruz, between the lighthouse and the beach pier.

Travel Pacific Coast Highway (Route 1) to Santa Cruz. Head south through downtown, toward the harbor area and amusement park. From the harbor, head west along Cliff Drive toward the lighthouse. Park the vehicle along the cliff, approximately one-quarter mile east of the lighthouse.

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There are two small coves below the cliff, east of the lighthouse; the more easterly cove with the old drain pipe and rocky rubble is the sampling site. Climb over the fence and hike down the cliff.

The site center is the center of the cove. The discrete mussel stations are the two low-profile rocks to the east and the one high-profile rock to the west.

Launch a boat from Santa Cruz Harbor for sediment collection. Santa Cruz Harbor is approximately 2 nautical miles east of Pt. Santa Cruz. Sediments are collected in 18 meters of water.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Southeast Farallon Islands, East Landing, CA

SITE CODE - FIEL

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 37° 41.77'N (Bivalves)
122° 59.99'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 18645 (NAD 1983)

SITE DESCRIPTION - Sampling is conducted on Southeast Farallon Island, one of four islands in the Farallon Group. The Farallon Islands are a U.S. Fish and Wildlife Refuge. The U.S. Fish and Wildlife Service has a cooperative agreement with the Point Reyes Bird Observatory (PRBO). The PRBO monitors and protects the seabird and marine mammal populations of the islands. Southeast Farallon Island is located 26 nautical miles west-southwest of San Francisco.

Conveyance to the island is either by boat or helicopter. Arrangements must be made with the U.S. Fish and Wildlife Service and the PRBO.

The bivalve site is located on the east side of the island, in a cove to the south of the skiff crane. The north end of the cove is marked by a high rocky peak situated between the cove and the crane. The three discrete stations are to the east and south of the site center.

SAMPLING METHODS - Intertidal, hand collection.

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SITE - San Francisco Bay, San Mateo Bridge, CA

SITE CODE - SFSM

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 37° 34.91'N (Bivalves)
122° 15.16'W

WATER DEPTH - 0.3 meter

37° 35.30'N (Sediments)
122° 13.53'W

LOCATED ON NOS CHART - 18651 (NAD 1983, February 4, 1989)

SITE DESCRIPTION - The San Mateo Bridge is located in South San Francisco Bay, east of Foster City. Mussel samples are collected from the fishing pier pilings adjacent to the western side of the San Mateo Bridge.

Travel Highway 101 to San Mateo. From the south, take the Dore Street exit off of Highway 101 to the Coyote Marina. From the north, take the Peninsula Avenue exit east to the Coyote Point Marina. The Coyote Point Marina boat launch is used to sample this site and also site SFDB (below).

Departing Coyote Point Marina by boat, head 045° magnetic for approximately 1.25 nautical miles to flashing red Fl R "8," then turn right (southeast) toward the bridge. Deviation from the channel course may result in "grounding," particularly during an extremely low tide. The San Mateo Bridge is 2 nautical miles southeast of Fl R "8."

The site center is the south side of the first (San Mateo Bridge) double piling east of the west fishing pier. The site center piling is 3 meters in diameter. The discrete mussel stations are among the first four sets of pilings on the eastern end of the west fishing pier.

Sediment collections are conducted on the east side of the channel, adjacent to the south face of the bridge.

SAMPLING METHODS - Intertidal, hand collection.

SITE - San Francisco Bay, Dumbarton Bridge, CA

SITE CODE - SFDB

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 37° 30.33'N (Bivalves)
122° 07.17'W

WATER DEPTH - 0.5 meters

37° 31.60'N (Sediments)
122° 09.63'W

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LOCATED ON NOS CHART - 18651 (NAD 1983; February 4, 1989)

SITE DESCRIPTION - The Dumbarton Bridge is located in South San Francisco Bay, east of Redwood City. Mussel samples are collected from the bridge pilings near the center of the channel.

Travel Highway 101 to San Mateo. From the south, take the Dore Street exit off Highway 101 to the Coyote Point Marina. From the north, take the Peninsula Avenue exit east to the marina. The Coyote Point Marina boat launch is used for sampling this site, as well as site SFSM (above).

Departing Coyote Point Marina by boat, head 045° magnetic for approximately 1.25 nautical miles, to Flashing Red Fl R "8." The area is very shallow and deviation from the channel course may result in "grounding." Continue in a southeasterly direction, pass under the San Mateo Bridge and proceed toward the Dumbarton Bridge. The Dumbarton Bridge is 10 nautical miles southeast of Fl R "8". Be advised of large magnetic anomalies in the vicinity of the Dumbarton Bridge due to a submerged pipeline.

The site center is the fifth concrete piling from the east end of the western fishing pier. The discrete mussel stations are the fourth, fifth, and sixth pilings. Specimens are collected from the southern (leeward) side of the pilings.

Sediments are collected northwest of the Dumbarton Bridge, between Redwood Creek Channel marker Fl R "2" and Dumbarton Channel marker Fl R "14". Soft mud can be collected in 1.5 meters of water.

SAMPLING METHODS - Intertidal, hand collection. A boat is required.

SITE - Emeryville, San Francisco Bay, CA

SITE CODE - SFEM

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 37° 49.25'N (Bivalves)
122° 19.70'W

WATER DEPTH - 0.5 meter

37° 49.69'N (Sediments)
122° 20.32'W

LOCATED ON NOS CHART - 18652 (NAD 1983)

SITE DESCRIPTION - The Emeryville sampling site is located under the Oakland side of the Bay Bridge.

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Travel Route 80 to Oakland and head west over the Oakland Bridge. Prior to reaching the toll booths, take a right onto the Cal Trans Maintenance Road. Park outside the gate. Walk through the gate and down the road, under the bridge. At the point where the road makes a U-turn, head south toward the small concrete building.

The site center is a 3-foot high concrete wall, adjacent to the southern face of the Bay Bridge. The discrete mussel stations are among the rocky rubble to the south and west. The mussels at this site attach themselves to the undersides of the rocks. The rocks must be removed down to approximately 1 foot to find the specimens. Replace rocks to their previous positions.

During the first year (1986) of the Mussel Watch Project this site was referred to as Yerba Buena, SFYB. When bivalves were collected (in 1987), the site was renamed as SFEM. The former SFYB site is north of the bridge and is now incorporated as the sediment collection site for SFEM.

For sediment collection, launch from the Berkeley Marina. The sediment site is located about .5 nautical miles west of the bivalve site, on the north side of the bridge, east of Treasure Island.

SAMPLING METHODS - Intertidal, hand collection.

SITE - East San Pablo Bay, Sempile Point, CA

SITE CODE - SPSM

TARGET SPECIES - Bivalves were not sampled at this site.

SITE CENTER COORDINATES - 38° 04.20'N (Sediments) **WATER DEPTH** - 5 meters
122° 14.33'W

LOCATED ON NOS CHARTS - 18651 (NAD 1983; February 04, 1989) 18654 (NAD 1927; Januray 26, 1985)

SITE DESCRIPTION - Sempile Point is located at the California Maritime Academy, near the mouth of the Napa River, between Vallejo and Benicia, on the east side of San Pablo Bay.

Travel Route 80 to the northside of the Carquinez Bridge, toward Vallejo. Beyond the bridge, turn left (west) into the California Maritime Academy. Sempile Point is the southwest corner of the campus. Mussels have not been present in this area of San Francisco Bay for several years.

Sediments are collected in the vicinity of Sempile Point. The sediment site center is 0.25 nautical miles east of the Navy Pier (Fl R "2"), at the mouth of the Napa River on the north side of the Carquinez Straits. For sediment collection, a boat may be launched from the Vallejo Marina.

SAMPLING METHODS - Subtidal, grab collection.

CALIFORNIA SITES

SITE - West San Pablo Bay, Point San Pedro, CA

SITE CODE - SPSP

TARGET SPECIES - Bivalves were not sampled at this site.

SITE CENTER COORDINATES - 38° 01.35'N (Sediments) **WATER DEPTH** - 6 meters
122° 25.53'W

LOCATED ON NOS CHARTS - 18652 (NAD 1983) and 18654 (NAD 1927)

SITE DESCRIPTION - Point San Pedro is located 4 miles east of San Rafael on the western shore of San Pablo Bay.

Travel Highway 101 to San Rafael and turn right (east) onto Second Street. Continue on Second Street as it runs into Point San Pedro Road and follows the coast of the peninsula.

Sediments are collected in the vicinity of Point San Pedro. The sediment site center is approximately 2.5 nautical miles north-northeast of Point San Pedro, on the north side of the shipping lane in 5-8 meters of water. Mussels have not been present in this area of the bay for several years.

For sediment collection, launch a vessel from the Loch Lomand Marina.

SAMPLING METHODS - Subtidal, grab collection.

SITE - Tomales Bay, Spenger's Residence, CA

SITE CODE - TBSR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 38° 08.95'N (Bivalves) **WATER DEPTH** - 0.3 meter
122° 54.17'W
38° 09.03'N (Sediments)
122° 54.00'W

LOCATED ON NOS CHART - 18643 (1927)

SITE DESCRIPTION - The site is located on Mr. Buddy Spenger's property on the western shore of Tomales Bay, east of Sacramento Landing.

From Highway 101 south of San Rafael, travel west on Sir Francis Drake Boulevard to Inverness. Turn north onto Pierce Point Road to the L Ranch, Cooperative Creamery. Drive over the cattle guard and take the right fork heading east toward the bay. Continue on the private (unpaved)

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road and turn right, heading past the water tanks and onto Mr. Spenger's property. The sampling site is the rocky point at the east end of the beach. As with other sites, this site is on private property and permission to gain access is required.

The site center is the man-made wall between the bluff and the rock outcrop. The discrete mussel stations are various boulders east and south of the site center.

For sediment collections, launch a boat from Bodega Harbor, approximately 15 nautical miles north of the site. Sediments are collected in 7 meters of water.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Bodega Bay, Bodega Bay Entrance, CA

SITE CODE - BBBE

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 38° 18.30'N (Bivalves)
123° 03.87'W

WATER DEPTH - 1 meter

38° 18.50'N (Sediments)
123° 02.84'W

LOCATED ON NOS CHART - 18643 (NAD 1927)

SITE DESCRIPTION - The sampling site is located on the southwest side of Bodega Head on the Bodega Peninsula. The site has previously been referred to as BBBH.

From the city of Santa Rosa, take Route 101 north to Route 12 (west) to Sebastopol. Continue to Bodega via the Bodega Highway and into the Bodega Bay and harbor area via Westshore Road. Travel past the Bodega Bay Marina and continue around the point past the entrance to the Bodega Bay Marine Laboratory (UC-Davis). Continue past Campbell Cove and up to the lower end of the upper parking lot.

Hike down the bluff adjacent to the parking lot, and head to the north end of the cove. Walk between the rock walls and the rock trail to the easterly ledge. Climb down the ledge into the cove and climb up the rock outcrops to the west. The site center is the highest point on the large outcrop and is distinguished by smooth sandstone, whereas the surrounding rock is rough and jagged-edged.

Sediment sampling may be difficult due to the frequent occurrence of high winds and seas. A boat can be launched in Bodega Harbor. In 1991, the sediment site was relocated to the area between Doran Beach and the northern jetty.

SAMPLING METHODS - Intertidal, hand collection.

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SITE - Point Arena, Point Arena Lighthouse, CA

SITE CODE - PALH

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 38° 57.18'N (Bivalves)
123° 44.30'W

WATER DEPTH - 1.7 meters

LOCATED ON NOS CHARTS - 18620 and 18640 (both NAD 1983)

SITE DESCRIPTION - The site is located on Point Arena, west of the Point Arena lighthouse and museum.

Travel Highway 101 north from Santa Rosa to Cloverdale. Take Route 128 west to Booneville. From Booneville, continue westward on Mountain View Road to Point Arena. Turn north on Lighthouse Road toward the site. Once on the winding road from Cloverdale to Point Arena, the trip through the coastal mountain range takes approximately 3 hours at an average speed of 25 miles per hour. Drive up to the lighthouse and check in with the superintendent or the duty lighthouse attendant. To access the site, lift the upper rail of the fence that abuts the west side of the museum. Walk out to the northwest point, behind the museum. Take the "trail" down to the base of the bluff. Use caution as the bluff is very steep. The site center is the level mesa west of the striated sandstone.

The site acronym for this site was PAPA for sampling years 1986-1989.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Point Delgada, Shelter Cove, CA

SITE CODE - PDSC

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 40° 02.31'N (Bivalves)
124° 04.76'W

WATER DEPTH - 1 meter

40° 01.35'N (Bivalve site starting in 1991)
124° 04.40'W

40° 02.38'N (Sediments)
124° 04.91'W

LOCATED ON NOS CHART - 18620 (NAD 1983)

CALIFORNIA SITES

SITE DESCRIPTION - The site is located in the coastal town of Shelter Cove, 23 miles west of Garberville.

The former bivalve site, which is located at the northwest end of town, has historically been hazardous to sample because of very rough surf conditions. In 1991, the site was relocated approximately 2 km south of the former site.

Travel Highway 101 to Redway (just north of Garberville). Turn west onto Shelter Cove Road. The road is winding and steep. At the end of Shelter Cove Road turn left (southeast) onto Upper Pacific Drive. Follow the bend in the road (south) past the marina and turn right (west) onto Lower Pacific Drive. Take the second left onto Coral Point Road. Park at the shore end of the cul-de-sac. Follow the grassy path that leads to a rocky beach/cove.

The sampling site is located approximately 100 meters seaward from the cove's bluff. The area consists of rows of striated rocks arranged parallel to the shore. The site center is a mesa area in the midst of the low-profile rocks.

Sediments are collected from Black Sands Beach, which is situated on the northwest side of town, in the vicinity of the former bivalve site. Sediments are fine to coarse black sand. Strong winds and high seas, typical of this vicinity, make small boat sampling impractical and hazardous.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Eureka, Humboldt Bay Jetty, CA

SITE CODE - HMBJ

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 40° 46.13'N (Bivalves)
124° 14.25'W

WATER DEPTH - 2 meters

40° 45.06'N (Sediments)
124° 12.83'W

LOCATED ON NOS CHART - 18622 (NAD 1927)

SITE DESCRIPTION - The site is the north jetty (projecting northwest) on the north spit of the Humboldt Bay entrance in Eureka. The jetty is approximately one-half mile long. The north end of the jetty (site vicinity) consists of large concrete structures called doloes.

CALIFORNIA SITES

Take Highway 101 to Eureka. From downtown Eureka, take Route 255 west to Samoa. Beyond the bridge, turn left (south) and pass the Louisiana-Pacific mill. Continue to the end of the paved road near the U. S. Coast Guard Station, and proceed down the gravel road toward the lot near the base of the jetty.

Walk out to the north end of the jetty. The site center doloë is at the base of the jetty light (Fl G "3"). The discrete mussel stations are located in the rocky area, on the east side of the jetty, south of the doloës.

For sediment sampling, launch a boat from the ramp just north of the Coast Guard Station. Sediments are at a depth of 5 meters.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Eureka, Samoa Bridge, CA

SITE CODE - EUSB

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 40° 49.32'N
124° 10.09'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHART - 18622 (NAD 1927; September 19, 1987)

SITE DESCRIPTION - The site is the western span (of three) of the Samoa Bridge in the Samoa Channel. The Samoa Channel is at the northern edge of Humboldt Bay and at the south edge of Arcata Bay in Eureka.

Take Highway 101 to Eureka. In downtown Eureka, turn left (west) onto Fourth Street and continue to the intersection of Waterfront Road. Turn right (north) on Waterfront Road to the public boat ramp at the east end of the Samoa Bridge.

From the boat launch, head south to the Eureka Channel Inner Reach. Continue north-northeast in the Samoa Channel toward Fl R "4", and onward to Fl Y "A". The sampling site is on the western side of the bridge. The site center is on the western edge of the channel near the guard rail with the green light on the bridge overhead. The discrete mussel stations are at the base of the concrete bridge supports.

Sediment sampling is conducted along the shoreline edges of the channel.

SAMPLING METHODS - Intertidal, hand collection. A boat is required.

CALIFORNIA SITES

SITE - Klamath River, Flint Rock Head, CA

SITE CODE - KRFR

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 41° 31.63'N
124° 04.78'W

WATER DEPTH - 1.5 meters

LOCATED ON NOS CHART - 18600 (NAD 1983)

SITE DESCRIPTION - The site is located in the Redwoods National Forest south of Crescent City and north of Eureka. The sampling location is adjacent to Flint Rock, a solitary 175-foot-high rock 2 miles south of the mouth of the Klamath River. Mussels have not been present since the 1989 field season.

Travel to Klamath via Highway 101. Just before the south end of the Klamath River Bridge, turn left (west) onto the light-duty paved road. Continue west and northwest along the Klamath River. Near the mouth of the river, the road rises and turns south. Park near the red house adjacent to the locked gate, above Dad's Fishing Camp.

Hike down the road to the south end of Dad's Camp. Walk south along the beach to Flint Rock. The sampling site is on the south side of Flint Rock, which is actually two large rocks. The site center is the eastern point of the northernmost rock. Discrete mussel stations are separate clusters on different sides of the rocks.

Small boat sampling in this vicinity is impractical in winter due to strong prevailing winds and high seas.

SAMPLING METHODS - Intertidal, hand collection.

SITE - Crescent City, Point Saint George, CA

SITE CODE - SGSG

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 41° 44.88'N (Bivalves)
124° 12.52'W

WATER DEPTH - 2 meters

41° 44.25'N (Sediments)
124° 11.33'W

LOCATED ON NOS CHART - 18603 (NAD 1983 - bivalve site; the inset: NAD 1927 - sediment site; Feb. 13, 1988)

SITE DESCRIPTION - The site is located 3 nautical miles south of Point St. George and 0.25 nautical miles north of Battery Point, off the beach at the end of Fifth Street in Crescent City.

CALIFORNIA SITES

Take Highway 101 north to Crescent City. Continue through the center of town and turn left (west) onto Fifth Street. Take Fifth Street to where it dead-ends at the intersection of Taylor Street and park.

The sampling site is the large rock outcrop off the beach. Take the stairway down to the beach and hike out over the rocky rubble to the site. Climb up the back side (east side) of the large rock and continue climbing around to the west side. The site center is the mesa area on the south face of the large-peaked rock.

For sediment sampling, a boat can be launched from Crescent City Harbor. Sediments are collected from a depth of approximately 35 meters.

SAMPLING METHODS - Intertidal, hand collection.

CALIFORNIA SITES

Benthic Surveillance

SITE - San Diego Bay, Outside, CA

SITE CODE - SDBOU

TARGET SPECIES - *Pleuronichthys verticalis* (hornyhead turbot) (1984, 1985)
Pleuronichthys ritteri (spotted turbot) (1984*, 1985*)

NOMINAL SITE CENTER - 32° 38.0'N
117° 11.0'W

WATER DEPTH AT
NOMINAL CENTER - 18 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	32° 38.0'	117° 12.2'
1984	B	32° 39.2'	117° 11.5'
1984	C	32° 40.4'	117° 10.9'
1985	A	32° 38.6'	117° 11.2'
1985	B	32° 37.8'	117° 11.9'
1985	C	32° 38.1'	117° 11.6'

LOCATED ON NOS CHART - 18765 (NAD 1927; June 6, 1987)

SITE DESCRIPTION - This site is outside of San Diego Harbor in the Pacific Ocean, southeast of Point Loma and northwest of Imperial Beach. The site center is southeast of the QK Fl 20ft 7m HORN buoy by 3.2 nautical miles, and northeast of "1" Fl WHIS by 3.7 nautical miles.

SITE - San Diego Bay, National City, CA

SITE CODE - SDBNC

TARGET SPECIES - *Paralabrax nebulifer* (barred sand Bass) (1987, 1988)

NOMINAL SITE CENTER - 32° 40.1'N
117° 07.6'W

WATER DEPTH AT
NOMINAL CENTER - 11 meters

CALIFORNIA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	32° 39.8'	117° 07.5'
1987	B	32° 40.1'	117° 07.6'
1987	C	32° 40.3'	117° 07.6'
1988	A	32° 39.7'	117° 07.5'
1988	B	32° 40.0'	117° 07.6'
1988	C	32° 40.0'	117° 07.7'

LOCATED ON NOS CHART - 18773 (NAD 1927; November 15, 1986)

SITE DESCRIPTION - The National City site center is located 0.20 nautical miles southwest of Mole Pier and southeast of Glorietta Bay, in the shipping channel. The site can be located 0.5 nautical miles southwest of the R "30" Fl R 4sec channel marker.

SITE - San Diego Bay, 28th Street, CA

SITE CODE - SDBTE

TARGET SPECIES - *Paralabrax nebulifer* (barred sand bass) (1984 -1988)
Paralabrax maculatofasciatus (spotted sand bass) (1987, 1989, 1985*)
Cheilotrema saturnum (black croaker) (1989)
Hypsopsetta guttulata (diamond turbot) (1984)

NOMINAL SITE CENTER - 32° 41.0'N
 117° 08.0'W

WATER DEPTH AT
 NOMINAL CENTER - 10 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	32° 41.0'	117° 08.2'
1984	B	32° 41.1'	117° 08.3'
1984	C	32° 41.3'	117° 08.4'
1985	A	32° 41.3'	117° 08.5'
1985	B	32° 41.2'	117° 08.3'
1985	C	32° 41.3'	117° 08.3'
1985	D	32° 41.3'	117° 08.4'
1986	A	32° 41.1'	117° 08.4'
1986	B	32° 41.1'	117° 08.2'

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

1986	C	32° 40.9'	117° 08.0'
1987	A	32° 41.1'	117° 08.4'
1987	B	32° 41.1'	117° 08.2'
1987	C	32° 41.2'	117° 08.3'
1988	A	32° 41.1'	117° 08.4'
1988	B	32° 41.1'	117° 08.2'
1988	C	32° 41.2'	117° 08.3'
1989	A	32° 41.1'	117° 08.4'
1989	B	32° 41.2'	117° 08.4'
1989	C	32° 41.3'	117° 08.6'

LOCATED ON NOS CHART - 18773 (NAD 1927, June 6, 1987)

SITE DESCRIPTION - This site center is located southeast of the 28th Street Pier, between Pier 1 and Pier 2 on the east side of the Bay. More specifically, the site center is located 0.4 nautical miles northwest of the R "28" 34 Fl R 4sec marker, and 0.5 nautical miles east-northeast of the R "26" Fl R 4sec marker. Both of these buoys are on the west side of the shipping channel.

SITE - San Diego Bay, North, CA

SITE CODE - SDBNO

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1986-1989)
Paralabrax nebulifer (barred sand bass) (1986, 1987)
Cheilotrema saturnum (black croaker) (1988, 1989)
Hypsopsetta guttulata (diamond turbot) (1986)
Paralichthys californicus (California halibut) (1988*)
Pleuronichthys ritteri (spotted turbot) (1987*)

NOMINAL SITE CENTER - 32° 43.0'N
 117° 11.0'W

WATER DEPTH AT
 NOMINAL CENTER - 11 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	32° 43.2'	117° 11.4'
1986	B	32° 43.2'	117° 11.3'
1986	C	32° 43.2'	117° 11.4'
1987	A	32° 43.3'	117° 11.3'
1987	B	32° 43.3'	117° 11.1'

CALIFORNIA SITES

1987	C	32° 43.3'	117° 11.0'
1988	A	32° 43.3'	117° 11.3'
1988	B	32° 43.4'	117° 11.1'
1988	C	32° 43.4'	117° 11.0'
1989	A	32° 43.3'	117° 11.1'
1989	B	32° 43.3'	117° 10.4'
1989	C	32° 43.4'	117° 11.7'

LOCATED ON NOS CHART - 18773 (NAD 1927, June 6, 1987)

SITE DESCRIPTION - North San Diego Bay is the center of activities for this sampling site, north of the shipping channel and west of the B Street Pier and the Navy Pier. The G "21" QG buoy that marks the west side of the shipping channel is west of this site center by 0.49 nautical miles, and the site is south of the Navy-maintained "21" Fl 4sec marker, which is north of the shipping channel.

SITE - San Diego Bay, Harbor Island, CA

SITE CODE - SDBHI

TARGET SPECIES - *Cheilotrema saturnum* (black croaker) (1987)
Genyonemus lineatus (white croaker) (1988)

NOMINAL SITE CENTER - 32° 43.4'N
 117° 12.7'W

**WATER DEPTH AT
 NOMINAL CENTER** - 7 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	32° 43.2'	117° 12.9'
1987	B	32° 43.4'	117° 12.7'
1987	C	32° 43.4'	117° 12.5'
1988	A	32° 43.2'	117° 13.0'
1988	B	32° 43.4'	117° 12.7'
1988	C	32° 43.4'	117° 12.5'

LOCATED ON NOS CHART - 18773 (NAD 1927; November 15, 1986)

SITE DESCRIPTION - The site center is located on the west end of Harbor Island in the north San Diego Bay. The site center is located 0.04 nautical miles southeast of the Fl 4sec 56ft 15m marker at the end of Harbor Island, and 0.19 nautical miles northeast of the end of Nel Pier.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE - San Diego Bay, Shelter Island, CA

SITE CODE - SDBSI

TARGET SPECIES - *Cheilotrema saturnum* (black croaker) (1987-1989)
Paralabrax maculatofasciatus (spotted sand bass) (1989*)

NOMINAL SITE CENTER - 32° 42.5'N
 117° 13.7'W

**WATER DEPTH AT
 NOMINAL CENTER** - 7 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	32° 42.4'	117° 13.8'
1987	B	32° 42.5'	117° 13.7'
1987	C	32° 42.6'	117° 13.6'
1988	A	32° 42.4'	117° 13.7'
1988	B	32° 42.5'	117° 13.6'
1988	C	32° 42.6'	117° 13.6'
1989	A	32° 42.5'	117° 13.6'
1989	B	32° 42.7'	117° 13.3'
1989	C	32° 42.9'	117° 13.2'

LOCATED ON NOS CHART - 18773 (NAD 1927; November 15, 1986)

SITE DESCRIPTION - The site center is located southeast of Shelter Island in the north San Diego Bay. It is 0.16 nautical mile north-northwest of the G"17" Fl G 4sec channel marker, and 0.2 nautical miles east of the flagpole located on the west end of Shelter Island.

SITE - Mission Bay, Outside, CA

SITE CODE - MIBOU

TARGET SPECIES - *Cheilotrema saturnum* (black croaker) (1988, 1990*)
Pleuronichthys ritteri (spotted turbot) (1990*)
Genyonemus lineatus (white croaker) (1989*)

NOMINAL SITE CENTER - 32° 47.1'N
 117° 15.5'W

**WATER DEPTH AT
 NOMINAL CENTER** - 11 meters

CALIFORNIA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	32° 48.0'	117° 15.7'
1988	B	32° 47.7'	117° 15.9'
1988	C	32° 46.8'	117° 15.5'
1989	A	32° 48.0'	117° 15.7'
1989	B	32° 47.7'	117° 15.9'
1989	C	32° 46.8'	117° 15.5'
1990	A	32° 47.4'	117° 15.9'
1990	B	32° 47.1'	117° 15.8'
1990	C	32° 46.8'	117° 15.7'

LOCATED ON NOS CHART - 18765 (NAD 1927; June 6, 1987)

SITE DESCRIPTION - The site center is located west of Mission Beach. It is in the Pacific Ocean, 0.6 nautical miles north of the Navy-maintained 2 QK Fl 32ft light, and 0.7 nautical miles west of Mission Beach.

SITE - Oceanside Harbor, Outside, CA

SITE CODE - OCEOU

TARGET SPECIES - *Seriphus politus* (queenfish) (1990)

NOMINAL SITE CENTER - 33° 11.6'N
117° 23.7'W

**WATER DEPTH AT
NOMINAL CENTER** - 8 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	A	33° 12.0'	117° 24.0'
1990	B	33° 11.6'	117° 23.7'
1990	C	33° 11.3'	117° 23.2'

LOCATED ON NOS CHART - 18774 (NAD 1983; August 26, 1989)

SITE DESCRIPTION - The Oceanside site center is located south of the entrance to Oceanside Harbor. It is 0.7 nautical miles south-southeast of the Fl R 5sec HORN "4" light, and 0.9 nautical miles southeast of the Fl R 2.5sec WHIS buoy R"2".

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE - Dana Point Harbor, Outside, CA

SITE CODE - DANOU

TARGET SPECIES - *Paralabrax nebulifer* (barred sand bass) (1984-1986, 1988)
Genyonemus lineatus (white croaker) (1984-1990)
Pleuronichthys verticalis (hornyhead turbot) (1984-1986, 1988-1990)
Pleuronichthys ritteri (spotted turbot) (1985*)
Phanerodon furcatus (white surfperch) (1985*)
Symphurus atricauda (California tonguefish) (1985*)
Paralichthys californicus (California halibut) (1988*, 1990*)

NOMINAL SITE CENTER - 33° 27.0'N
 117° 41.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 9 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	33° 26.9'	117° 42.5'
1984	B	33° 26.7'	117° 41.5'
1984	C	33° 26.5'	117° 40.6'
1985	A	33° 27.0'	117° 42.4'
1985	B	33° 27.0'	117° 42.6'
1985	C	33° 27.0'	117° 42.2'
1986	A	33° 26.7'	117° 42.7'
1986	B	33° 26.8'	117° 42.9'
1986	C	33° 26.4'	117° 42.0'
1987	A	33° 26.6'	117° 42.2'
1987	B	33° 26.7'	117° 42.1'
1987	C	33° 27.1'	117° 41.9'
1988	A	33° 26.4'	117° 42.2'
1988	B	33° 26.6'	117° 42.1'
1988	C	33° 26.9'	117° 41.7'
1989	A	33° 27.3'	117° 42.2'
1989	B	33° 26.9'	117° 42.2'
1989	C	33° 26.8'	117° 42.2'
1990	A	33° 27.1'	117° 42.0'
1990	B	33° 26.9'	117° 42.2'
1990	C	33° 26.8'	117° 42.3'

LOCATED ON NOS CHART - 18746 (NAD 1927; May 8, 1987)

SITE DESCRIPTION - The site center is located in the area of approaches to the Dana Point Harbor, south of San Juan Creek and southeast of Dana Point Harbor. The center is located 0.45 nautical miles southeast of the Fl G 4sec 30ft 9m "5" HORN marker, and 0.75 nautical miles south of the mouth of San Juan Creek.

CALIFORNIA SITES

SITE - Dana Point, Inside Harbor, CA

SITE CODE - DANIH

TARGET SPECIES - *Paralabrax nebulifer* (barred sand bass) (1987, 1988)

NOMINAL SITE CENTER - 33° 27.5'N
117° 42.1'W

**WATER DEPTH AT
NOMINAL CENTER** - 7 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	D	33° 27.5'	117° 42.1'

LOCATED ON NOS CHART - 18746 (NAD 1927; May 8, 1987)

SITE DESCRIPTION - The site center is in the main entrance channel directly inside of the breakwater for the boat basin. The center is located midway between channel marker buoys R'10' and R'12".

SITE - San Pedro Bay, Cerritos Channel, CA

SITE CODE - SPBCC

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1987, 1988*, 1989, 1990)

NOMINAL SITE CENTER - 33° 45.7'N
118° 15.3'W

**WATER DEPTH AT
NOMINAL CENTER** - 15 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	33° 45.0'	118° 15.2'
1989	B	33° 45.8'	118° 15.3'
1989	C	33° 45.6'	118° 15.5'
1990	A	33° 45.0'	118° 15.2'
1990	B	33° 45.8'	118° 15.3'
1990	C	33° 45.6'	118° 15.5'

LOCATED ON NOS CHART - 18751 (NAD 1927, October 25, 1986)

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE DESCRIPTION - The site center is located on the southern edge of the East Basin in Cerritos Channel. It is 0.2 nautical miles west-southwest of the Fl G 4sec buoy "1," and 0.3 nautical miles southwest of the Fl R 4sec 15ft light "2".

SITE - San Pedro Bay, Seal Beach, CA

SITE CODE - SPBSB

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1984, 1990)
Pleuronichthys ritteri (spotted turbot) (1984*, 1990*)
Symphurus atricauda (California tonguefish) (1984*)
Pleuronichthys verticalis (hornyhead turbot) (1984)
Paralichthys californicus (California halibut) (1990*)

NOMINAL SITE CENTER - 33° 44.0'N
 118° 08.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 10 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	33° 44.2'	118° 07.8'
1984	B	33° 44.1'	118° 08.0'
1984	C	33° 44.0'	118° 08.1'
1990	A	33° 44.2'	118° 07.8'
1990	B	33° 44.1'	118° 08.0'
1990	C	33° 44.1'	118° 08.1'

LOCATED ON NOS CHART - 18749 (NAD 1927; November 22, 1986)

SITE DESCRIPTION - The site center is located south of Belmont Shore and Alamitos Bay. Island Chaffee is to the northwest of the site center. The site center is 0.64 nautical miles north of the Fl G 6sec 43ft 5m "1" HORN marker on the right end (facing north) of the Long Beach Breakwater, and 0.65 nautical miles southwest of the Iso G 6sec 25ft 7m "1" HORN marker on the west jetty at the entrance of Alamitos Bay.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE - San Pedro Bay, Long Beach, CA

SITE CODE - SPBLB

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1985-1987, 1989, 1990)
Seriphus politus (queenfish) (1990*)
Symphurus atricauda (California tonguefish) (1985*)

NOMINAL SITE CENTER - 33° 44.0'N
 118° 10.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 15 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	33° 44.8'	118° 10.5'
1984	B	33° 44.5'	118° 10.7'
1984	C	33° 44.4'	118° 10.5'
1985	A	33° 44.8'	118° 10.5'
1985	B	33° 44.5'	118° 10.7'
1985	C	33° 44.4'	118° 10.5'
1986	A	33° 44.4'	118° 10.5'
1986	B	33° 44.6'	118° 10.6'
1986	C	33° 44.9'	118° 10.5'
1987	A	33° 44.3'	118° 10.8'
1987	B	33° 44.3'	118° 10.7'
1987	C	33° 44.4'	118° 10.5'
1989	A	33° 44.5'	118° 10.7'
1989	B	33° 44.3'	118° 10.4'
1989	C	33° 44.1'	118° 10.3'
1990	A	33° 44.4'	118° 10.8'
1990	B	33° 44.4'	118° 10.6'
1990	C	33° 44.4'	118° 10.5'

LOCATED ON NOS CHART - 18749 (NAD 1927; November 22, 1986)

SITE DESCRIPTION - This site is located in the Long Beach Outer Harbor, south of Island Freeman and north of the Long Beach Breakwater. The Fl R 2.5sec 41ft 5m "2" marker which is on the right side of the Long Beach Breakwater when facing north, is 0.9 nautical miles southwest of the site. The site is 1.7 nautical miles northwest of the Fl G 6sec 43ft 5m "1" HORN marker, which is at the east end of the Breakwater when facing north.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE - San Pedro Bay, Outer Harbor, CA

SITE CODE - SPBOH

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1985 - 1990)
Paralichthys californicus (California halibut) (1988*)
Symphurus atricauda (California tonguefish) (1985*)

NOMINAL SITE CENTER - 33° 42.6'N
 118° 15.4'W

**WATER DEPTH AT
 NOMINAL CENTER** - 6 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	33° 42.7'	118° 15.0'
1984	B	33° 42.5'	118° 15.4'
1984	C	33° 42.8'	118° 15.4'
1985	A	33° 42.7'	118° 15.0'
1985	B	33° 42.5'	118° 15.4'
1985	C	33° 42.8'	118° 15.4'
1986	A	33° 42.5'	118° 15.5'
1986	B	33° 42.7'	118° 15.5'
1986	C	33° 42.7'	118° 15.8'
1987	A	33° 42.5'	118° 16.1'
1987	B	33° 42.6'	118° 15.8'
1987	C	33° 42.6'	118° 15.6'
1989	A	33° 42.6'	118° 16.7'
1989	B	33° 42.5'	118° 16.0'
1989	C	33° 42.6'	118° 16.4'
1990	A	33° 42.6'	118° 15.6'
1990	B	33° 42.5'	118° 16.1'
1990	C	33° 42.6'	118° 16.3'

LOCATED ON NOS CHARTS - 18751 (NAD 1927) and 18749 (NAD 1927; October 25, 1986)

SITE DESCRIPTION - The site center is located north of the Middle Breakwater, west of the Naval Base Mole, and east of Reservation Point in the Outer Harbor. The site center is 0.15 nautical miles north of the W Or Fl 4sec buoy, and 0.66 nautical miles southwest of the R "WR2" Q R buoy.

CALIFORNIA SITES

SITE - San Pedro Bay, Outside, CA

SITE CODE - SPBOU

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1985-1990)
Paralichthys californicus (California halibut) (1988*)
Symphurus atricauda (California tonguefish) (1985)

NOMINAL SITE CENTER - 33° 42.0'N
 118° 15.7'W

**WATER DEPTH AT
 NOMINAL CENTER** - 6 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	33° 42.1'	118° 15.4'
1984	B	33° 42.0'	118° 15.7'
1984	C	33° 41.9'	118° 16.0'

LOCATED ON NOS CHARTS - 18751 (NAD 1927) and 18749 (NAD 1927; October 25, 1986)

SITE DESCRIPTION - The site center is outside of the San Pedro Breakwater, southeast of Point Fermin, 0.8 nautical miles southwest of the Fl G 15sec 73ft 22m HORN 8 marker.

SITE - Santa Monica Bay, Manhattan Beach, CA

SITE CODE - SMBMB

TARGET SPECIES - *Pleuronichthys verticalis* (hornyhead turbot) (1984, 1985)
Pleuronichthys ritteri (spotted turbot) (1984, 1985*)

NOMINAL SITE CENTER - 33° 53.0'N
 118° 26.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 20 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	33° 52.6'	118° 25.5'
1984	B	33° 53.2'	118° 25.8'
1984	C	33° 53.6'	118° 26.2'
1985	A	33° 53.3'	118° 25.8'
1985	B	33° 53.9'	118° 26.1'
1985	C	33° 53.0'	118° 25.5'

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

1986	A	33° 53.3'	118° 25.8'
1986	B	33° 53.9'	118° 26.1'
1986	C	33° 53.0'	118° 25.5'

LOCATED ON NOS CHART - 18774 (NAD 1927; June 21, 1986)

SITE DESCRIPTION - Santa Monica Bay is the general location for this site. The site center is located west of Manhattan Beach and south of El Segundo, 1 nautical mile west of the fish haven at Manhattan Beach and 1.9 nautical miles southeast of the privately maintained R "2ES" Fl 4sec BELL buoy.

SITE - Santa Monica Bay, West, CA

SITE CODE - SMBWE

TARGET SPECIES - *Pleuronichthys verticalis* (hornyhead turbot) (1986, 1988-1990)
Genyonemus lineatus (white croaker) (1986*)
Parophrys vetulus (English sole) (1986, 1988, 1990*)

NOMINAL SITE CENTER - 33° 56.0'N
118° 34.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 39 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	33° 56.3'	118° 34.1'
1986	B	33° 56.5'	118° 33.3'
1986	C	33° 57.1'	118° 32.9'
1986	D	33° 56.5'	118° 33.5'
1988	A	33° 56.2'	118° 34.2'
1988	B	33° 56.4'	118° 33.2'
1988	C	33° 57.1'	118° 32.8'
1989	A	33° 56.8'	118° 33.3'
1989	B	33° 56.5'	118° 33.1'
1989	C	33° 57.0'	118° 32.8'
1990	A	33° 56.6'	118° 33.3'
1990	B	33° 56.8'	118° 32.8'
1990	C	33° 57.3'	118° 32.6'

LOCATED ON NOS CHART - 18744 (NAD 1927; June 21, 1986)

CALIFORNIA SITES

SITE DESCRIPTION - The site center is located in the northwestern corner of a restricted area in the Santa Monica Bay, about 5 nautical miles southwest of the G "1" Fl G BELL buoy and 5.4 nautical miles northwest of R "2ES" Fl BELL (priv maintd).

SITE - Santa Monica Bay, Southeast, CA

SITE CODE - SMBSE

TARGET SPECIES - *Pleuronichthys verticalis* (hornyhead turbot) (1989, 1990)
Genyonemus lineatus (white croaker) (1990, 1989*)

NOMINAL SITE CENTER - 33° 47.5'N
 118° 27.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 77 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	33° 49.2'	118° 25.8'
1989	B	33° 48.6'	118° 26.2'
1989	C	33° 48.7'	118° 25.9'
1990	A	33° 48.5'	118° 25.8'
1990	B	33° 48.2'	118° 26.2'
1990	C	33° 47.9'	118° 26.6'

LOCATED ON NOS CHART - 18744 (NAD 1983; April 28, 1990)

SITE DESCRIPTION - The center is located southeast of Redondo Canyon. It is 1.1 nautical miles north-northwest of the Fl R 4sec BELL buoy R"10", and 2.1 nautical miles west of Flat Rock Point.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE - Santa Monica Bay, South, CA

SITE CODE - SMBSO

TARGET SPECIES - *Pleuronichthys verticalis* (hornyhead turbot) (1989, 1990)

NOMINAL SITE CENTER - 33° 52.5'N
118° 27.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 53 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1989	A	33° 52.8'	118° 29.9'
1989	B	33° 52.9'	118° 30.8'
1989	C	33° 52.7'	118° 31.3'
1990	A	33° 52.9'	118° 29.8'
1990	B	33° 53.1'	118° 30.6'
1990	C	33° 54.0'	118° 29.8'

LOCATED ON NOS CHART - 18744 (NAD 1983; April 28, 1990)

SITE DESCRIPTION - The site center is west of Manhattan Beach. It is 2 nautical miles south-southeast of the privately maintained Fl 4sec BELL buoy R"2ES", and 1.8 nautical miles west-southwest of the fish haven pier on Manhattan Beach.

SITE - Santa Monica Bay, North, CA

SITE CODE - SMBNO

TARGET SPECIES - *Pleuronichthys verticalis* (hornyhead turbot) (1990)

NOMINAL SITE CENTER - 33° 59.3'N
118° 35.9'W

**WATER DEPTH AT
NOMINAL CENTER** - 60 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1990	A	33° 59.3'	118° 35.4'
1990	B	33° 59.3'	118° 35.9'
1990	C	33° 59.2'	118° 36.5'

LOCATED ON NOS CHART - 18744 (NAD 1983; April 28, 1990)

CALIFORNIA SITES

SITE DESCRIPTION - The site center is north-northeast of Santa Monica Canyon. It is 3.9 nautical miles southeast of the privately maintained "W Or PA" buoy near Kellers Shelter, and 3.7 nautical miles west-southwest of the privately maintained "W Or S PA" buoy.

SITE - Santa Monica Bay, Deep, CA

SITE CODE - SMBDE

TARGET SPECIES - No fish were sampled at this site.

NOMINAL SITE CENTER - 33° 55.6'N
118° 45.2'W

**WATER DEPTH AT
NOMINAL CENTER** - 567 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	33° 55.6'	118° 45.2'

LOCATED ON NOS CHART - 18744 (NAD 1927; June 21, 1986)

SITE DESCRIPTION - This site is located approximately 5.5 nautical miles off the California coastline between Point Dume and Malibu Point. This sediment site is 4.7 nautical miles southeast of the R "12" F1R 4sec WHIS buoy, which is just offshore of Point Dume, and 6.1 nautical miles south-southwest of Malibu Point. This site has also been called Santa Monica Bay, Basin.

SITE - San Luis Obispo, CA

SITE CODE - SLUOB

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1988*)

NOMINAL SITE CENTER - 35° 06.1'N
120° 45.9'W

**WATER DEPTH AT
NOMINAL CENTER** - 60 meters

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	35°06.1'	120°45.9'

LOCATED ON NOS CHART - 18700 (NAD 1927)

SITE DESCRIPTION - This site center is located 4 nautical miles south of San Luis Obispo Bay. The exact site center is 3.5 nautical miles south of Point San Luis, 2.2 nautical miles south-southwest of the Qk Fl R GONG buoy at Souza Rock, and 2.9 nautical miles south-southeast of the Fl G 6sec BELL buoy at Westdahl Rock.

SITE - Estero Bay, CA

SITE CODE - ESTBY

TARGET SPECIES - No fish were sampled at this site.

NOMINAL SITE CENTER - 35° 21.5'N
121° 53.2'W

**WATER DEPTH AT
NOMINAL CENTER** - 35 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	35°21.5'	121°53.2'

LOCATED ON NOS CHART - 18700 (NAD 1927)

SITE DESCRIPTION - This site center is located directly west of the entrance to Morro bay. The exact position is 0.8 nautical miles due west of the flashing 4-second "1" Bell buoy at the entrance to Morro Bay.

CALIFORNIA SITES

SITE - Monterey Bay, Indian Head Beach, CA

SITE CODE - MONIH

TARGET SPECIES - *Parophrys vetulus* (English sole) (1985, 1986, 1990)
Symphurus atricauda (California tonguefish) (1985*)
Pleuronichthys verticalis (hornyhead turbot) (1990*)

NOMINAL SITE CENTER - 36° 38.0'N
 121° 51.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 18 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	A	36° 37.9'	121° 52.1'
1985	B	36° 37.6'	121° 52.3'
1985	C	36° 37.4'	121° 52.7'
1986	A	36° 37.3'	121° 52.7'
1986	B	36° 37.3'	121° 52.3'
1986	C	36° 37.2'	121° 52.6'
1987	A	36° 37.7'	121° 52.7'
1987	B	36° 37.3'	121° 52.5'
1990	A	36° 43.7'	121° 50.9'
1990	B	36° 44.5'	121° 51.0'
1990	C	36° 44.9'	121° 50.9'

LOCATED ON NOS CHART - 18685 (NAD 1983; February 21, 1987)

SITE DESCRIPTION - The center of activities for Monterey Bay is northeast of Point Cabrillo and south of Indian Head Beach. The Y "A" GONG Fl Y 6sec marker on the south side of a restricted area is 2 nautical miles northwest of the site, and the R "4" Fl R 4sec BELL buoy off of Point Cabrillo is 2.25 nautical miles southwest of the site.

SITE - Monterey Bay, Moss Landing, CA

SITE CODE - MONML

TARGET SPECIES - *Parophrys vetulus* (English sole) (1986)

NOMINAL SITE CENTER - 36° 48.0'N
 121° 48.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 31 meters

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	36° 48.5'	121° 48.0'
1986	B	36° 48.1'	121° 47.6'
1986	C	36° 48.4'	121° 48.4'

LOCATED ON NOS CHART - 18685 (NAD 1983; February 21, 1987)

SITE DESCRIPTION - The Moss Landing Harbor entrance channel is east of this site center, in Monterey Bay. The center is 0.44 nautical miles south of the Fl G 4sec 22ft 3m "3" Ra Ref marker on the north side of the entrance channel, and 0.1 nautical miles north of the "RW" "ML:A" Mo(A) BELL buoy.

SITE - Farallon Islands, CA

SITE CODE - FARIS

TARGET SPECIES - No fish were sampled at this site.

NOMINAL SITE CENTER - 37° 39.4'N
123° 03.5'W

**WATER DEPTH AT
NOMINAL CENTER** - 111 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	37° 39.8'	122° 02.4'
1987	B	37° 39.4'	122° 03.5'
1987	C	37° 38.9'	122° 04.1'

LOCATED ON NOS CHART - 18645 (NAD 1927; November 24, 1984)

SITE DESCRIPTION - This site center is 3.5 nautical miles southwest of the southern Farallon Islands, and 8.4 nautical miles south-southwest of the RB "NR" Quick flashing WHISTLE buoy marking Fanny Shoal.

CALIFORNIA SITES

SITE - San Francisco Bay, Hunters Point, CA

SITE CODE - SFBHP

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1984*, 1985-1990)
Platichthys stellatus (starry flounder) (1984, 1986, 1987, 1990)
Parophrys vetulus (English sole) (1989, 1990*)
Leptocottus armatus (Pacific staghorn sculpin) (1984*, 1985*)

NOMINAL SITE CENTER - 37° 42.0'N
 122° 22.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 4 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	37° 41.4'	122° 21.8'
1984	B	37° 41.9'	122° 21.7'
1984	C	37° 43.1'	122° 21.4'
1985	A	37° 41.7'	122° 21.6'
1985	B	37° 42.4'	122° 21.5'
1985	C	37° 41.6'	122° 21.4'
1986	A	37° 41.3'	122° 21.9'
1986	B	37° 42.0'	122° 21.5'
1986	C	37° 41.7'	122° 21.4'
1987	A	37° 42.2'	122° 22.0'
1987	B	37° 43.0'	122° 21.7'
1987	C	37° 41.8'	122° 22.2'
1988	A	37° 42.1'	122° 22.0'
1988	B	37° 41.8'	122° 21.7'
1988	C	37° 41.7'	122° 22.1'
1989	A	37° 42.3'	122° 22.4'
1989	B	37° 41.8'	122° 21.3'
1989	C	37° 41.7'	122° 22.0'
1990	A	37° 42.1'	122° 22.3'
1990	B	37° 41.8'	122° 21.2'
1990	C	37° 41.9'	122° 22.0'

LOCATED ON NOS CHART - 18651 (NAD 1983; February 4, 1989)

SITE DESCRIPTION - The site center is located south of Hunters Point, southeast of Candlestick Park, and north of Sierra Point. The site coordinates place the center 1.23 nautical miles west-northwest of the R "2" Fl 4sec buoy, which marks the nearby shipping channel. It also places the site 1.8 nautical miles south of E Int R 6sec 35ft 8m marker, off of Point Avisadero.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE - San Francisco Bay, Redwood City, CA

SITE CODE - SFBRC

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1987, 1988)

NOMINAL SITE CENTER - 37° 33.4'N
122° 11.2'W

**WATER DEPTH AT
NOMINAL CENTER** - 10 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	37° 33.3'	122° 11.1'
1987	B	37° 33.4'	122° 11.2'
1987	C	37° 33.5'	122° 11.5'
1988	A	37° 33.2'	122° 11.0'
1988	B	37° 33.4'	122° 11.3'
1988	C	37° 33.6'	122° 11.4'

LOCATED ON NOS CHART - 18651 (NAD 1983; February 4, 1989)

SITE DESCRIPTION - The site center is located on the east side of the shipping channel in San Francisco Bay, just northeast of the mouth of Redwood Creek. It is 0.52 nautical miles northeast of the FIR 4sec 15ft 4m "2" Ra Ref HORN (Oct 1 to Apr 1) marker at the mouth of Redwood Creek.

SITE - San Francisco Bay, Oakland Entrance, CA

SITE CODE - SFBOA

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1984)
Leptocottus armatus (Pacific staghorn sculpin) (1984*)

NOMINAL SITE CENTER - 37° 47.5'N
122° 20.3'W

**WATER DEPTH AT
NOMINAL CENTER** - 9 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	37° 47.2'	122° 20.2'
1984	B	37° 47.5'	122° 20.3'
1984	C	37° 47.6'	122° 20.4'

LOCATED ON NOS CHART - 18650 (NAD 1983; June 13, 1987)

CALIFORNIA SITES

SITE DESCRIPTION - This site center is located in San Francisco Bay, 0.5 nautical miles south of the Oakland Inner Harbor entrance channel, 0.6 nautical miles south of the flashing GR "A" buoy at the entrance to Middle Harbor, and 0.9 nautical miles north of the flashing green 4 sec G "1" buoy.

SITE - San Francisco Bay, Oakland Estuary, CA

SITE CODE - SFBOE

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1987-1990)

NOMINAL SITE CENTER - 37° 47.0'N
122° 21.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 12 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	37° 46.6'	122° 14.6'
1987	B	37° 46.8'	122° 15.1'
1987	C	37° 47.0'	122° 15.4'
1988	A	37° 46.7'	122° 14.7'
1988	B	37° 46.8'	122° 15.0'
1988	C	37° 47.0'	122° 15.4'
1989	A	37° 46.7'	122° 14.7'
1989	B	37° 46.8'	122° 15.0'
1989	C	37° 47.0'	122° 15.4'
1990	A	37° 46.7'	122° 14.7'
1990	B	37° 46.9'	122° 15.1'
1990	C	37° 47.0'	122° 15.5'

LOCATED ON NOS CHART - 18649 (NAD 1983; May 6, 1989)

SITE DESCRIPTION - The Oakland Estuary site is located west of Alameda, east of Rincon Point and south of Yerba Buena Island. The center is 0.59 nautical miles northwest of the G "1" Fl G 4sec BELL buoy on the north side of the Navy Ship Channel, and 1.2 nautical miles southeast of the Fl R 5sec 15ft "6" on the south side of the Inner Harbor entrance channel. For 1988-1990 the site was located southwest of Coast Guard Island. It was in the Brooklyn Basin South Channel, 0.1 nautical miles from the shore of Coast Guard Island, and 0.2 nautical miles east-southeast of Fortmann Basin.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

SITE - San Francisco Bay, Southampton Shoal, CA

SITE CODE - SFBSS

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1984*, 1985*, 1987*, 1988*, 1990)

Platichthys stellatus (starry flounder) (1984-1988)

Leptocottus armatus (Pacific staghorn sculpin) (1984*)

Hypsopsetta guttulata (diamond turbot) (1986*)

Parophrys vetulus (English sole) (1989, 1990*)

NOMINAL SITE CENTER - 37° 53.0'N
122° 24.0'W

WATER DEPTH AT
NOMINAL CENTER - 6 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	37° 53.1'	122° 24.1'
1984	B	37° 53.2'	122° 24.4'
1984	C	37° 53.5'	122° 24.8'
1985	A	37° 53.2'	122° 23.8'
1985	B	37° 53.3'	122° 24.3'
1985	C	37° 53.6'	122° 24.8'
1986	A	37° 53.0'	122° 24.0'
1986	B	37° 53.3'	122° 24.0'
1986	C	37° 53.3'	122° 24.7'
1987	A	37° 52.8'	122° 23.6'
1987	B	37° 53.2'	122° 23.6'
1987	C	37° 53.2'	122° 24.0'
1988	A	37° 53.0'	122° 23.6'
1988	B	37° 53.2'	122° 23.7'
1988	C	37° 53.2'	122° 24.1'
1990	A	37° 52.9'	122° 23.6'
1990	B	37° 52.9'	122° 23.9'
1990	C	37° 53.0'	122° 24.1'

LOCATED ON NOS CHART - 18649 (NAD 1983; May 6, 1989)

SITE DESCRIPTION - The site center is located on the southeastern end of Southampton Shoal, north of Angel Island and south of Point Angel Island. The site center is 0.2 nautical miles north of the Iso R 6sec 32ft 6m BELL, and 0.9 nautical miles northeast of the R "8" Fl R 2.5sec marker.

CALIFORNIA SITES

SITE - San Francisco Bay, Castro Creek, CA

SITE CODE - SFBCC

TARGET SPECIES - *Platichthys stellatus* (starry flounder) (1987, 1988)

Genyonemus lineatus (white croaker) (1988*)

NOMINAL SITE CENTER - 37° 58.8'N
122° 24.8'W

**WATER DEPTH AT
NOMINAL CENTER** - 4 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	38° 00.0'	122° 23.3'
1987	B	37° 58.8'	122° 24.8'
1987	C	37° 57.9'	122° 25.3'
1988	A	38° 00.4'	122° 23.4'
1988	B	37° 58.9'	122° 24.8'
1988	C	37° 58.4'	122° 25.5'

LOCATED ON NOS CHART - 18649 (NAD 1983; May 6, 1989)

SITE DESCRIPTION - The site center is located east of San Pablo Strait, northwest of San Pablo and north of Point San Pablo. It is 0.4 nautical miles southeast of the Fl R 6sec 15ft "4" channel marker, and 1 nautical mile northeast of the R "2" Fl R 4sec marker at Point San Pablo.

SITE - San Francisco Bay, San Pablo Bay, CA

SITE CODE - SFBSP

TARGET SPECIES - *Platichthys stellatus* (starry flounder) (1984-1987)

Genyonemus lineatus (white croaker) (1988)

Leptocottus armatus (Pacific staghorn sculpin) (1984*, 1985*)

NOMINAL SITE CENTER - 38° 03.0'N
122° 17.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 8 meters

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	38° 03.1'	122° 16.8'
1984	B	38° 02.8'	122° 17.6'
1984	C	38° 02.9'	122° 18.6'
1985	A	38° 03.2'	122° 16.8'
1985	B	38° 03.0'	122° 17.5'
1985	C	38° 02.8'	122° 18.4'
1986	A	38° 03.2'	122° 17.0'
1986	B	38° 02.5'	122° 18.3'
1986	C	38° 02.3'	122° 18.5'
1987	A	38° 03.0'	122° 17.0'
1987	B	38° 02.5'	122° 17.4'
1987	C	38° 02.4'	122° 18.5'
1988	A	38° 03.1'	122° 17.0'
1988	B	38° 02.6'	122° 17.5'
1988	C	38° 02.3'	122° 18.7'

LOCATED ON NOS CHART - 18654 (NAD 1983; January 26, 1985)

SITE DESCRIPTION - This site is located west of Davis Point, east of Pinole Shoal, northwest of Lone Tree Point, and south of the San Pablo Strait ship channel. The center is 1.15 nautical miles east of the Fl R 4sec 15ft 3m Ra Ref marker on the south side of the shipping channel, 0.5 nautical miles southwest of the privately maintained F HORN buoy, and 0.9 nautical miles northwest of Lone Tree Point.

SITE - San Francisco Bay, Islais Creek Channel, CA

SITE CODE - SFBIC

TARGET SPECIES - No fish were sampled at this site.

NOMINAL SITE CENTER - 37° 44.9'N
122° 22.1'W

**WATER DEPTH AT
NOMINAL CENTER** - 10 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A	37° 44.9'	122° 23.1'
1987	B	37° 44.9'	122° 22.6'

LOCATED ON NOS CHART - 18650 (NAD 1983; June 13, 1987)

CALIFORNIA SITES

SITE DESCRIPTION - This site center is located in the Islais Creek Channel adjacent to San Francisco Bay, 1.5 nautical miles north of Hunters Point, and 0.05 nautical miles due east of the Bascule Bridge crossing Islais Creek Channel in the center of the waterway.

SITE - Bodega Bay, North, CA

SITE CODE - BODNO

TARGET SPECIES - *Genyonemus lineatus* (white croaker) (1984-1990)
Parophrys vetulus (English sole) (1985-1987, 1988, 1990)
Platichthys stellatus (starry flounder) (1984-1988, 1990)
Leptocottus armatus (Pacific staghorn sculpin) (1984*, 1985*)

NOMINAL SITE CENTER - 38° 18.0'N
 123° 02.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 16 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	38° 18.1'	123° 02.2'
1984	B	38° 18.2'	123° 02.5'
1984	C	38° 18.1'	123° 02.1'
1985	A	38° 18.2'	123° 02.1'
1985	B	38° 18.3'	123° 01.8'
1985	C	38° 18.0'	123° 02.4'
1986	A	38° 17.9'	123° 01.3'
1986	B	38° 18.4'	123° 01.4'
1986	C	38° 18.6'	123° 02.3'
1987	A	38° 18.7'	123° 02.4'
1987	B	38° 18.4'	123° 01.4'
1987	C	38° 18.0'	123° 01.3'
1988	A	38° 18.7'	123° 02.0'
1988	B	38° 18.4'	123° 01.5'
1988	C	38° 17.9'	123° 01.2'
1989	A	38° 18.7'	123° 02.2'
1989	B	38° 18.4'	123° 01.5'
1989	C	38° 18.0'	123° 01.2'
1990	A	38° 18.6'	123° 02.3'
1990	B	38° 18.5'	123° 01.8'
1990	C	38° 17.9'	123° 01.4'

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

CALIFORNIA SITES

LOCATED ON NOS CHART - 18643 (NAD 1927; October 18, 1986)

SITE DESCRIPTION - This site is located southeast of Bodega Harbor and Doran Beach, north of Bodega Rock, and east of Bodega Head. The site center coordinates for this site place it 1.76 nautical miles east of the Fl 4sec 20ft 6m "B" HORN buoy at the entrance to Bodega Harbor, and 0.82 nautical miles north of the R W "BA" Mo (A) GONG.

SITE - Humboldt Bay, Indian Island, CA

SITE CODE - HUMII

TARGET SPECIES - *Platichthys stellatus* (starry flounder) (1985)
Leptocottus armatus (Pacific staghorn sculpin) (1985*)

NOMINAL SITE CENTER - 40° 49.0'N
124° 10.0'W

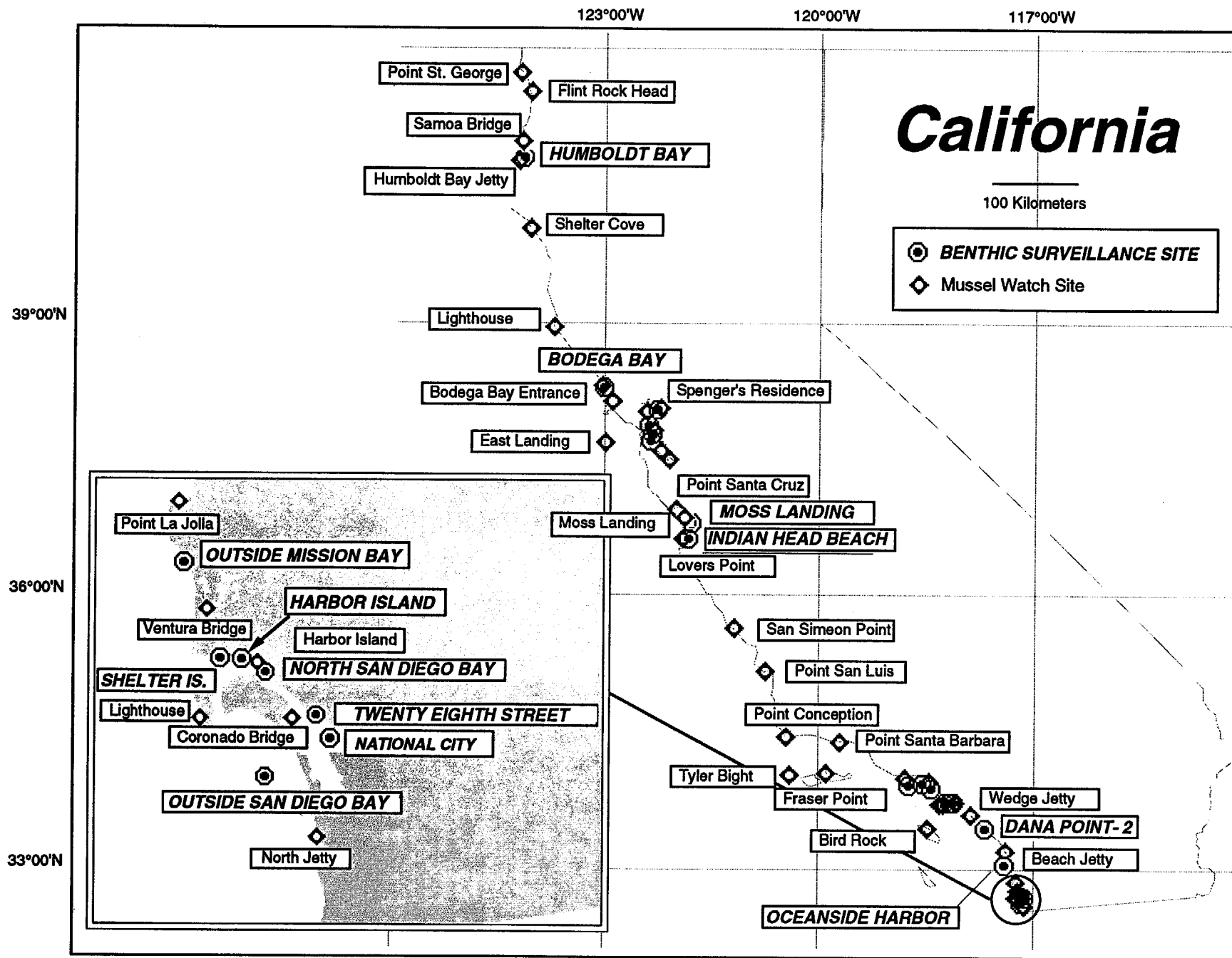
**WATER DEPTH AT
NOMINAL CENTER** - 12 meters

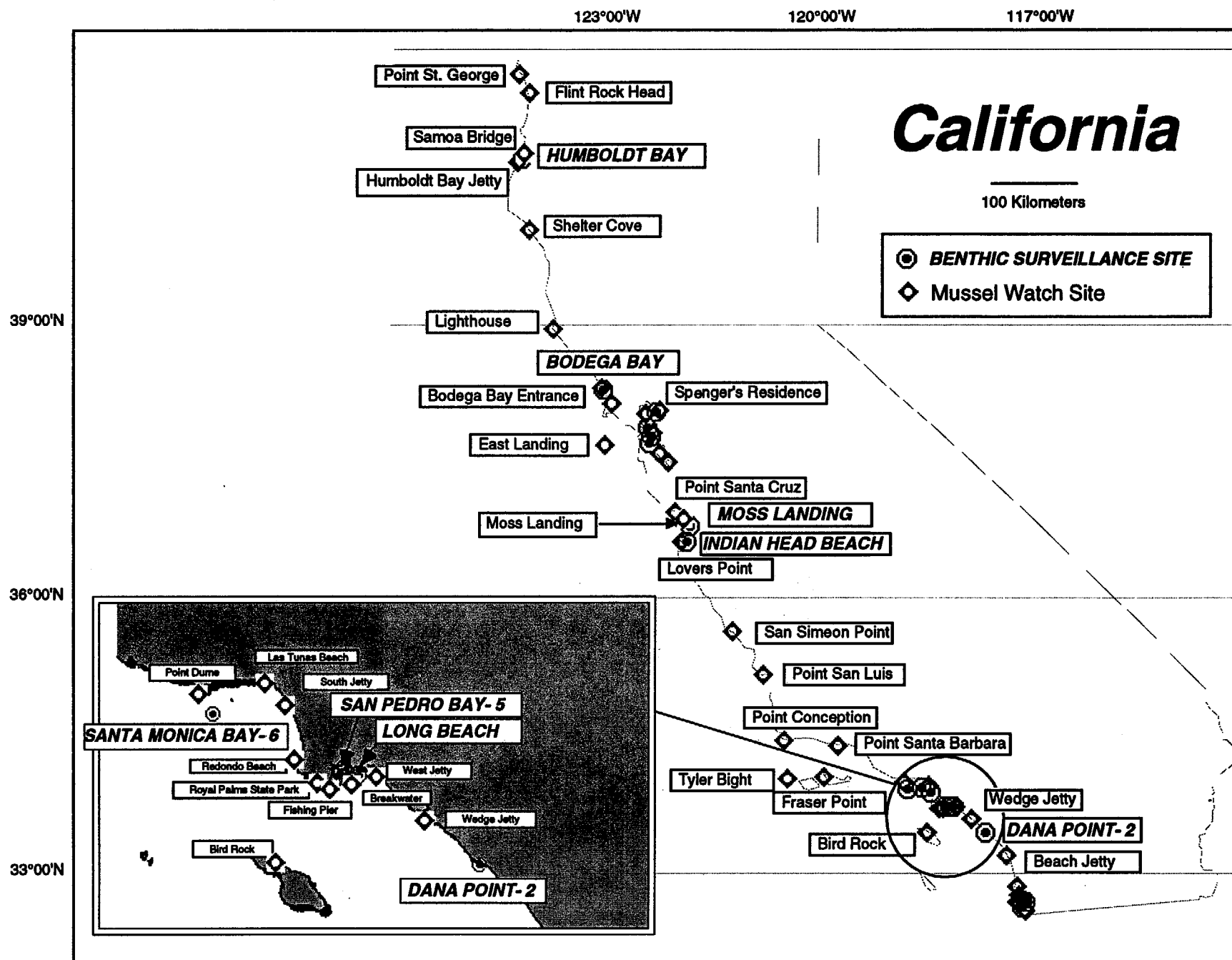
LOCATION OF SEDIMENT STATIONS:

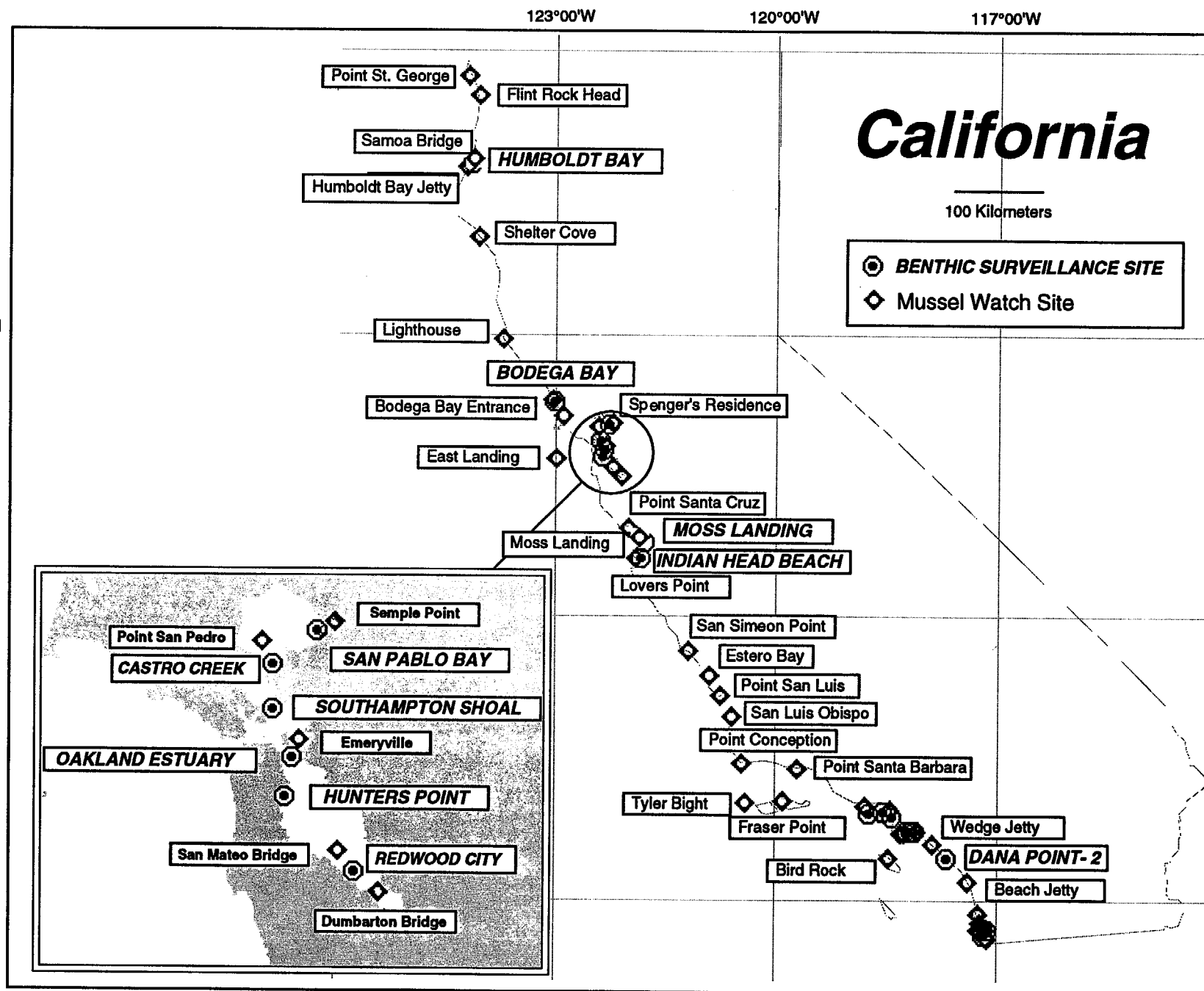
SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	A	40° 46.8'	124° 11.8'
1985	B	40° 48.7'	124° 09.8'
1985	C	40° 50.1'	124° 07.4'

LOCATED ON NOS CHART - 18622 (NAD 1927; September 19, 1987)

SITE DESCRIPTION - The Humboldt Bay site is located just north of Indian Island, south of the bridge, in Humboldt Bay. The center is located 0.35 nautical miles east northeast of the W Or "A" Fl Y 4s marker, which is north of the Somoa Channel. The site is also 0.59 nautical miles northwest of the Fl G 4s buoy, which is at the end of the Eureka Channel Inner Reach.







OREGON SITES

Mussel Watch

SITE - Coos Bay, Coos Head, OR

SITE CODE - CBCH

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 43° 21.03'N (Bivalves)
124° 19.85'W

WATER DEPTH - 1.5 meters

43° 22.17'N (Sediments)
124° 18.80'W

LOCATED ON NOS CHART - 18587 (NAD 1927; February 14, 1987)

SITE DESCRIPTION - The site is located on the riprap at the Oregon Institute of Marine Biology at Coos Head. Permission from the laboratory director is required for access during working hours.

Sediments are collected across the navigation channel from the town of Empire near Range Marker "A" and "B" (black and orange in color). Avoid collecting in the spoils area northeast of Pigeon Point, the sewage outfall at Empire, and the spoils areas near River Mile 5 and 8 (Pony Point). Ebb-tide sampling is undesirable. A boat may be launched at the small boat basin in Charleston or Empire.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Coos Bay, Russell Point, OR

SITE CODE - CBRP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 43° 26.00'N (Bivalves)
124° 13.15'W

WATER DEPTH - 0.8 meters

43° 25.75'N (Sediments)
124° 13.03'W

LOCATED ON NOS CHART - 18587 (NAD 1927)

OREGON SITES

SITE DESCRIPTION - This area is a mud flat. The mussels are on rocks piled at the bases of the supports at the north end of the Highway 101 bridge spanning Coos Bay. Stations are located at bridge supports 8, 9, and 10. Bridge supports are counted from the north end of the bridge.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Yaquina Bay, Yaquina Head, OR

SITE CODE - YHYH

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 44° 40.58'N (Bivalves)
124° 04.68'W

WATER DEPTH - 2.5 meters

LOCATED ON NOS CHART - 18561 (NAD 1927)

SITE DESCRIPTION - Mussels are found on rocks south of the tip of Yaquina Head. For site access, turn off Highway 101 approximately 5 miles north of Newport at the sign to Yaquina Head. Park in the lot and go down the staircase to the beach directly below the lighthouse. Beware of high winds and surf and surging tide.

For sediment collection, launch at Rivers Bend Marina. Travel downriver to Sally's Slough and sample near the entrance to the north of the dredged channel.

This site is no longer part of the monitoring effort, because it was categorized in 1992 as a "Marine Garden" by the Oregon Department of Fish and Game.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Yaquina Bay, Sally's Slough, OR

SITE CODE - YHSS

TARGET SPECIES - Only sediments were collected at this site.

SITE CENTER COORDINATES - 44° 36.83'N (Sediments)
124° 00.95'W

WATER DEPTH - 2.5 meters

OREGON SITES

LOCATED ON NOS CHART - 18581 (NAD 1983)

SITE DESCRIPTION - This is the sediment collection site for YHYH (previous listing). This site is located about 5 miles from the city of Newport, Oregon. Access is via a road that follows the Yaquina River on the north shore to River's Bend Marina near Sally's Slough and Oneatta Point. A boat launching sling is available year-round at River's Bend Marina. From the marina, proceed downriver approximately 1.75 nautical miles to Sally's Slough. Sampling must occur on an incoming high tide due to the shallowness of the bay.

SAMPLING METHOD - Sediments are collected with a grab sampler.

SITE - Yaquina Bay, Oneatta Point, OR

SITE CODE - YBOP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 44° 34.98'N (Bivalves)
124° 00.05'W

44° 34.78'N (Sediments)
124° 00.78'W

LOCATED ON NOS CHART - 18581 (NAD 1983)

SITE DESCRIPTION - Mussels are acquired from the Oregon Oyster Company located approximately 2 miles upriver from the River's Bend Marina (approximately 5 miles from Newport). Drive to the Company via the road to Toledo.

For sediment collection, use the sling launch at River's Bend Marina. Sample sediments at Oneatta Point near the channel markers off Pools Slough, approximately one-half mile upriver from the marina. Ebb-tide sampling is undesirable. Sampling must occur on an incoming high tide due to the shallowness of the bay.

SAMPLING METHOD - Hand collection.

OREGON SITES

SITE - Tillamook Bay, Hobsonville Point, OR

SITE CODE - TBHP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 45° 32.87'N (Bivalves)
123° 54.38'W

WATER DEPTH - 1.5 meters

45° 30.96'N (Sediments)
123° 55.59'W

LOCATED ON NOS CHART - 18558 (NAD 1927)

SITE DESCRIPTION - The bivalve site is located at Hobsonville Point, near the town of Garibaldi, Oregon. Hobsonville Point forms the northern boundary of Miami Cove in Tillamook Bay. The site center is near the historic marker at Hobsonville Point. Mussels are located on the cobbles and small boulders forming Hobsonville Point.

For sediment collection, launch a boat at the Garibaldi Boat Basin ramp. Sample in South Channel on the northwest side of Tillamook Bay.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Columbia River, South Jetty, OR

SITE CODE - CRSJ

TARGET SPECIES - *Mytilus edulis* (blue mussel) on Columbia River side of South Jetty
Mytilus californianus (California mussel) on Pacific Ocean side of South Jetty

SITE CENTER COORDINATES - 46° 14.00'N
124° 02.78'W (Bivalves - *Mytilus edulis*)

WATER DEPTH - 2 meters

46° 13.70'N (Bivalves- *Mytilus californianus*)
124° 01.12'W

LOCATED ON NOS CHART - 18521 (NAD 1927)

SITE DESCRIPTION - *Mytilus edulis* are located on the Columbia River side of the South Jetty and grow on the protected faces and crevices of the basalt boulders that form the jetty. From Parking Lot C, it is about one-half mile down the river side of the jetty to where the mussels begin.

Mytilus californianus grow on the Pacific Ocean side of the South jetty, high on the rocks in the most exposed areas. They can be collected immediately across the jetty at Parking Lot C near the observation tower.

OREGON SITES

CAUTION: THIS IS A HIGH-ENERGY AREA. USE EXTREME CAUTION WHILE SAMPLING AND DO NOT TURN YOUR BACK TO THE WATER. THE SURF IS USUALLY 5 TO 10 METERS HIGH. WEAR FULL RAINGEAR. THE SURF WILL BREAK ON THE OCEAN SIDE AND COME COMPLETELY OVER THE JETTY TO THE RIVER SIDE. MANDATORY 2-PERSON TRIP.

For sediment collection corresponding to this site, see Young's Bay below.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Columbia River, Youngs Bay, OR

SITE CODE - CRYB

TARGET SPECIES - This is a sediment site only.

SITE CENTER COORDINATES - 46° 11.00'N (Sediment) **WATER DEPTH** - 2 meters
123° 52.75'W

LOCATED ON NOS CHART - 18521 (NAD 1927, October 26, 1985)

SITE DESCRIPTION - Launch a boat at the Hammond, Oregon boat ramp. From the Hammond Boat Basin, head east for the Young's Bay site. The site center is near Channel Marker #2-fluorescent orange, approximately one-half mile west of Young's Bay Bridge.

SAMPLING METHOD - Grab collection.

OREGON SITES

Benthic Surveillance

SITE - Coos Bay, North Bend, OR

SITE CODE - COONB

TARGET SPECIES - *Parophrys vetulus* (English sole) (1989, 1990, 1985*)
Platichthys stellatus (starry flounder) (1984-1986, 1988, 1990)
Leptocottus armatus (Pacific staghorn sculpin) (1984*, 1985*)

NOMINAL SITE CENTER - 43° 24.0'N
 124° 13.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 10 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	43° 23.1'	124° 16.7'
1984	B	43° 25.7'	124° 13.8'
1984	C	43° 21.9'	124° 12.5'
1985	A	43° 25.6'	124° 13.7'
1985	B	43° 22.6'	124° 12.5'
1985	C	43° 22.2'	124° 12.5'
1986	A	43° 21.9'	124° 12.5'
1986	B	43° 22.6'	124° 12.5'
1986	C	43° 25.6'	124° 13.6'
1988	A	43° 22.0'	124° 12.6'
1988	B	43° 22.7'	124° 12.6'
1988	C	43° 23.0'	124° 13.0'
1989	A	43° 23.0'	124° 13.0'
1989	B	43° 22.7'	124° 12.5'
1989	C	43° 22.1'	124° 12.5'
1990	A	43° 23.0'	124° 13.0'
1990	B	43° 22.7'	124° 12.6'
1990	C	43° 22.2'	124° 12.5'

LOCATED ON NOS CHART - 18587 (NAD 1927; February 14, 1987)

SITE DESCRIPTION - Site center is west of the North Bend Upper Range and east of the town of North Bend. The site center is 0.18 nautical miles southwest of the QK Fl 16ft marker, and 0.49 nautical miles northwest of the QK Fl G 16ft marker.

OREGON SITES

SITE - Columbia River, Youngs Bay, OR

SITE CODE - COLYB

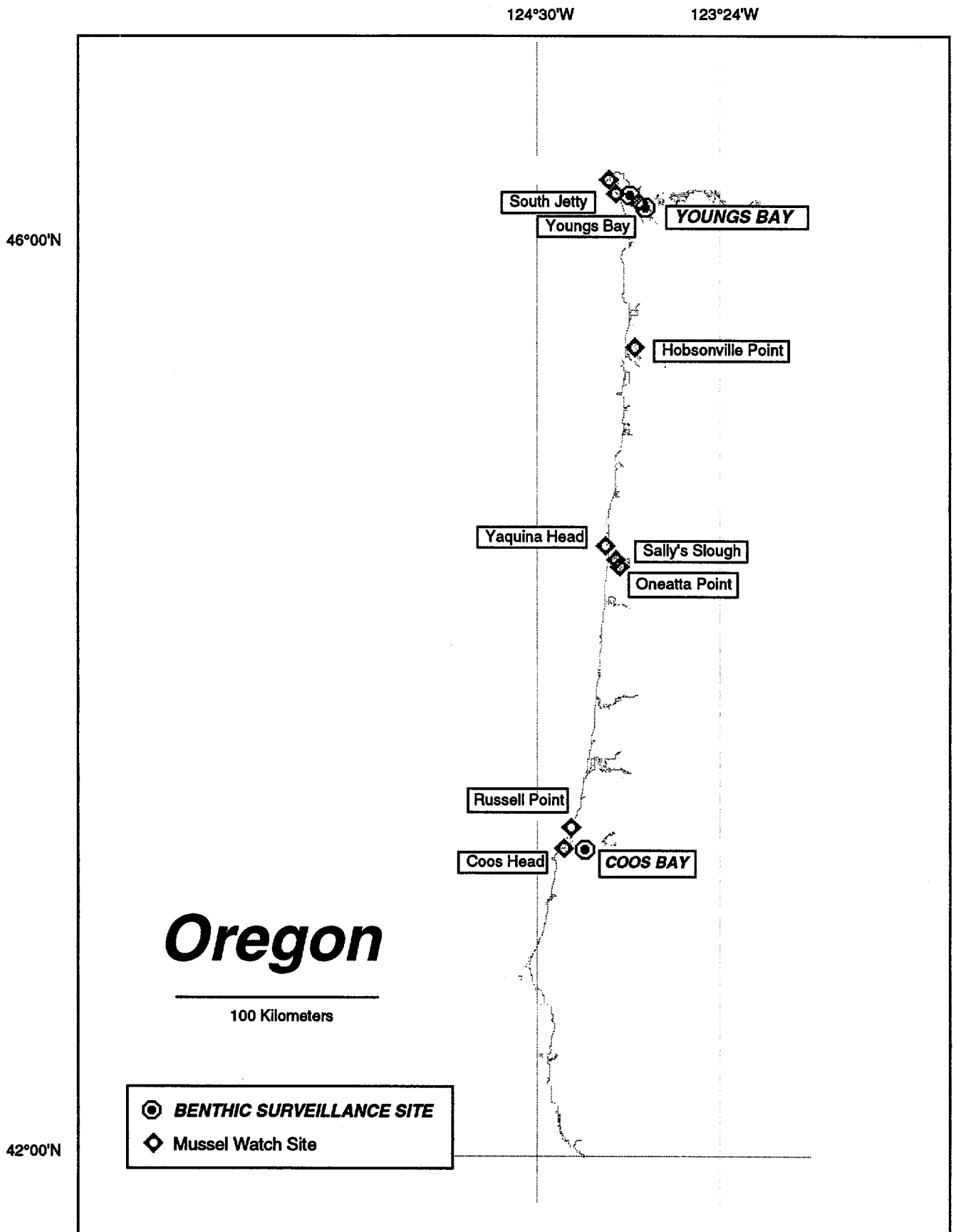
TARGET SPECIES - *Platichthys stellatus* (starry flounder) (1986)

NOMINAL SITE CENTER - 46° 10.0'N
123° 50.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 3 meters

LOCATED ON NOS CHART - 18521 (NAD 1927; October 26, 1985)

SITE DESCRIPTION - Astoria is north of the Young's Bay site center, Daggett Point is to the east and Bascule Bridge is to the west. The center is located 1.25 nautical miles east of the RN "4" buoy, and 0.92 nautical miles northeast of the C "11" marker.



WASHINGTON SITES

Mussel Watch

SITE - Columbia River, North Jetty, WA

SITE CODE - CRNJ

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 46° 16.67'N (Bivalves)
124° 03.73'W

WATER DEPTH - 2.5 meters

46° 16.15'N (Sediments)
123° 59.92'W

LOCATED ON NOS CHART - 18521 (NAD 1927)

SITE DESCRIPTION - Mussels are collected on the rocks forming the north jetty located in the Fort Canby State Park camping area. Access is at the end of the road in the State Park.

This sediment site is located in Baker's Bay on the north side of the Columbia River mouth. Access is by boat from the boat basin in Ilwaco. A sling launch is available year-round at the Port of Ilwaco facilities. From the boat basin, take the navigation channel south and enter the river mouth proper. Enter Baker's Bay from the south tip of Sand Island and locate the tower just inside the mouth of Baker's Bay. Note that entry to Baker's Bay must be made on a high and flooding tide due to the shallowness of the bay.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Willapa Bay, Nahcotta, WA

SITE CODE - WBNA

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 46° 29.80'N (Bivalves)
124° 01.72'W

WATER DEPTH - 3 meters

46° 30.48'N (Sediments)
124° 00.36'W

LOCATED ON NOS CHART - 18504 (NAD 1927)

SITE DESCRIPTION - Mussels are found on the oyster-farming racks owned by the State of Washington Oyster Laboratory in Nahcotta. The boat launch is at Nahcotta Small Boat Basin approximately one-third mile from the shellfish laboratory.

WASHINGTON SITES

Sediments are collected approximately 1 mile northeast of the boat launch in Nahcotta Channel near the green channel marker "G13".

SAMPLING METHOD - Intertidal, hand collection.

SITE - Gray's Harbor, Westport Jetty, WA

SITE CODE - GHWJ

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 46° 54.75'N (Bivalves)
124° 07.05'W

WATER DEPTH - 2.5 meters

46° 52.55'N (Sediments)
124° 04.87'W

LOCATED ON NOS CHART - 18502 (NAD 1983)

SITE DESCRIPTION - Locate the blue and white observation tower on the south jetty in Westport. Mussels grow on the riprap immediately below the tower. To get there drive to Westport, Washington, and locate the Islander Restaurant. The observation tower is at the restaurant parking lot.

Sediments are collected in South Bay-Grays Harbor near Grass Island. Leave Westport Boat Basin and follow the south Bay Channel to Channel marker R"10". The site center is located approximately 2 miles southeast of Westport Boat Basin and 3/4 miles northwest of the Bay City Bridge.

SAMPLING METHOD - Intertidal, hand collection.

WASHINGTON SITES

SITE - Strait of Juan de Fuca, Cape Flattery, WA

SITE CODE - JFCF

TARGET SPECIES - *Mytilus californianus* (California mussel)

SITE CENTER COORDINATES - 48° 23.30'N (Bivalves)
124° 43.28'W

WATER DEPTH - 2.5 meters

LOCATED ON NOS CHART - 18484 (NAD 1927)

SITE DESCRIPTION - The bivalve site is to the north and slightly east, by approximately 0.25 nautical miles, of Hole in the Wall Cove. There are no signs or prominent landmarks. To access mussels, follow the signs from Neah Bay to Cape Flattery. The road goes through the military base. From the Cape Flattery parking area, access is via game trails to a remote beach that receives few visitors. This site is very dangerous to sample and must be visited only during daylight hours in order to find the trails leading to the beach. Any attempt to go there should only be tried on calm days and during low tides. A guide is recommended. CAUTION: THIS IS A HIGH SURF AREA. DO NOT ATTEMPT TO SAMPLE DURING A STORM, AND USE A ROPE FOR SAFETY.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Strait of Juan de Fuca, Neah Bay, WA

SITE CODE - JFNB

TARGET SPECIES - Only sediments were collected at this site.

SITE CENTER COORDINATES - 48° 22.48'N (Sediment)
124° 37.00'W

WATER DEPTH - 2 meters

LOCATED ON NOS CHART - 18484 (NAD 1927)

SITE DESCRIPTION - This site, located near Neah Bay, Washington, is the sediment site for JFCF (previous listing). Neah Bay is located on the Makah Indian Reservation and is reached from Port Angeles, Washington, via Highways 112 or 101 (depending on road closures due to slides). In Neah Bay, access is via the boat launch located at Big Salmon Resort. No docks are available and the resort is closed during the winter. The site center is about one-third mile from the boat ramp at the approximate center point of Neah Bay.

WASHINGTON SITES

SITE - Puget Sound, Port Angeles, WA

SITE CODE - PSPA

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 48° 08.38'N
123° 25.01'W (Bivalves)

WATER DEPTH - 55 meters

48° 08.28'N (Sediments)
123° 25.10'W

LOCATED ON NOS CHART - 18468 (NAD 1983)

SITE DESCRIPTION - The bivalve site is located at the Sea Farms of Washington Salmon Net Pens. Access is by boat. Launch a boat at the Port Angeles Harbor boat launch and go northeast to Ediz Hook. Pens are located about one-quarter mile east of Pilot Station. The sediment site is approximately 275 meters southeast of the net pens in 49 meters of water.

SITE - Puget Sound, Port Townsend, WA

SITE CODE - PSPT

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 48° 06.32'N (Bivalves)
122° 46.63'W

WATER DEPTH - 1.5 meters

48° 06.18'N (Sediments)
122° 45.90'W

LOCATED ON NOS CHART - 18464 (NAD 1927)

SITE DESCRIPTION - The bivalve site is on the outside of the riprap forming the west end of the Port Townsend Marina. Access to the site is via the public boat ramp in the marina.

The sediment site is located off the south side of the marina riprap in 18 meters of water.

SAMPLING METHOD - Intertidal, hand collection.

WASHINGTON SITES

SITE - Puget Sound, Hood Canal, WA

SITE CODE - PSHC

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 49.90'N (Bivalves) **WATER DEPTH** - 2 meters
122° 41.20'W
47° 50.32'N (Sediments)
122° 38.90'W

LOCATED ON NOS CHART - 18441 (NAD 1983)

SITE DESCRIPTION - The bivalve site is located at the Southpoint Ferry Terminal just south of the Hood Canal Floating Bridge. Exit Highway 104 and follow the signs to the abandoned ferry terminal.

The sediment site is approximately 1.6 miles northeast of the bivalve site in 64 meters of water. A boat launch is located under the west end of Hood Canal Floating Bridge.

SAMPLING METHOD - Intertidal, hand collection.

SITE - South Puget Sound, Budd Inlet, WA

SITE CODE - SSBI

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 05.94'N (Bivalves) **WATER DEPTH** - 0 meters
122° 53.60'W
47° 06.03'N (Sediments)
122° 54.73'W

LOCATED ON NOS CHART - 18456 (NAD 1927)

SITE DESCRIPTION - The mussel collection site is at the Washington State Department of Natural Resources Marine Research and Development Center Laboratory on the riprap near the dock below the office building. From Gull Harbor Road in Olympia, turn left on 47th Avenue SW and proceed to the laboratory. Permission is required to gain access.

The sediment site center is approximately midway between the bivalve site and Tykle Cove, and approximately 0.5 nautical miles northeast of Olympia Shoal. For sediment collection, launch a boat at the ramp in East Bay Marina. From the marina, travel north to the center of Budd inlet near the Department of Natural Resources Laboratory.

SAMPLING METHOD - Intertidal, hand collection.

WASHINGTON SITES

SITE - Commencement Bay, Tahlequah Point, WA

SITE CODE - CBTP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 20.15'N
122° 30.10'W

WATER DEPTH - 1.2 meters

LOCATED ON NOS CHART - 18448 (NAD 1983)

SITE DESCRIPTION - The mussel site is at the east end of the base of the Washington State Ferry dock, located on Vashon Island at Tahlequah Point. The mussels are located on rocks about 50 meters east of the dock. From Tacoma, take the Point Defiance Ferry to Vashon Island.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Commencement Bay, Browns Point, WA

SITE CODE - CBBP

TARGET SPECIES - Only sediments were collected at this site.

SITE CENTER COORDINATES - 47° 17.58'N (Sediment)
122° 25.93'W

WATER DEPTH - 66 meters

LOCATED ON NOS CHART - 18453 (NAD 1927)

SITE DESCRIPTION - This site is the sediment site for CBTP (previous listing). The site is located southeast of Browns Point in the log booming area near the mouth of Hylebos Waterway, on the north side of Commencement Bay near Tacoma. Access to the site is by boat from the City of Tacoma boat launch located next to the Point Defiance-Tahlequah Point Ferry Terminal near Ruston, Washington. From the boat ramp on Point Defiance (the southwest shore of Commencement Bay), motor across Commencement Bay to the northeast shore near Brown's Point and the mouth of Hylebos Waterway. The site center is in approximately 55 meters of water near the log-booming area shown on the NOAA chart.

SAMPLING METHOD - Grab collection.

WASHINGTON SITES

SITE - Puget Sound, South Seattle, WA

SITE CODE - PSSS

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 31.73'N (Bivalves)
122° 23.92'W
47° 31.55'N (Sediment)
122° 24.27'W

WATER DEPTH - 0.8 meters

LOCATED ON NOS CHART - 18449 (NAD 1983)

SITE DESCRIPTION - The bivalve site is located just south of Point Williams near Lincoln Park in West Seattle. Park in the lot near the Southworth-Fauntle Ferry Terminal and walk through Lincoln Park to the beach, about 300 meters. Mussels are on the large cobble rock. The sediment site is due west of the bivalve site in 198 meters of water-approximately one-half mile away. Boat launches are located at Kingston and Duwamish Head.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Elliott Bay, Duwamish Head, WA

SITE CODE - EBDH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 35.73'N (Bivalves)
122° 23.20'W

WATER DEPTH - 1.5 meters

47° 34.55'N (Sediments)
122° 25.08'W

LOCATED ON NOS CHART - 18449 (NAD 1983)

SITE DESCRIPTION - This site is at the northernmost point of Duwamish Head, located on the southwest shore of Elliott Bay near Seattle. Access is via Harbor Avenue SW in downtown Seattle. Mussels are located on a concrete bulkhead that forms a public fishing access and park area where Harbor Avenue SW turns into Alki Avenue. Mussels can be found by entering the beach, via the set of concrete stairs from the parking area, and looking at the bottom 0.5-1.0 meter of the concrete bulkhead. The sediment site center is located near Duwamish Head on the southwest shore of Elliott Bay. Access is via Harbor Avenue SW to the public boat launch located on Duwamish Head. The site is located in 106 meters of water approximately one-quarter miles north of the boat ramp.

SAMPLING METHOD - Intertidal, hand collection.

WASHINGTON SITES

SITE - Sinclair Inlet, Waterman Point, WA

SITE CODE - SIWP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 35.12'N (Bivalves)
122° 34.15'W

WATER DEPTH - 1.0 meter

47° 33.05'N (Sediments)
122° 37.62'W

LOCATED ON NOS CHART - 18449 (NAD 1927; August 25, 1984)

SITE DESCRIPTION - Mussels are found at the base of Watermans Point Light in Sinclair Inlet. Travel from Port Orchard to Waterman Point on Bay Road, which parallels the east side of Sinclair Inlet. Access the site through private property at the end of Waterman Point Road.

For sediment collection, launch a boat at the ramp in Port Orchard. The sediment site center is located in 12 meters of water at the mooring buoy "L-3" near the restricted area of the Navy Yard in Bremerton. The site center is approximately 0.5 nautical miles northeast of the floats and slips at the Port Orchard Marina.

SITE - Elliott Bay, Four-Mile Rock, WA

SITE CODE - EBFR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 38.35'N (Bivalves)
122° 24.74'W

WATER DEPTH - 0.9 meters

47° 37.67'N (Sediments)
122° 24.33'W

LOCATED ON NOS CHART - 18449 (NAD 1983)

SITE DESCRIPTION - Mussels grow on Four-Mile Rock and adjacent rocks. From Magnolia Boulevard in Magnolia district of Seattle, turn onto Perkins Lane and proceed almost to the end. Access is through Metro property marked by a tall picket fence.

The sediment site center is located near Magnolia Bluff on the north shore of Elliott Bay, in 122 meters of water, approximately 1.25 nautical miles south and east of the bivalve site located at Four-Mile Rock.

SAMPLING METHOD - Intertidal, hand collection.

WASHINGTON SITES

SITE - Whidbey Island, Possession Point, WA

SITE CODE - WIPP

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 54.15'N (Bivalves)
122° 22.80'W

WATER DEPTH - 1 meter

47° 54.61'N (Sediments)
122° 20.64'W

LOCATED ON NOS CHART - 18473 (NAD 1983)

SITE DESCRIPTION - Mussels are found on the rocks at Possession Point (the south tip of Whidbey Island) near the high clay banks. From Clinton, take Humphrey Street to Glendale Road and turn right. Follow Glendale Road to Jewett Road. Turn left on Jewett Road and follow it to Cultus Bay Road. Turn right Cultus Bay Road onto Possession Point Road and proceed to the Bait Company.

For sediment collection, launch a boat at Kingston Marina in Kingston. The sediment site is northeast of Possession Point in Possession Sound, in approximately 180 meters of water.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Puget Sound, Everett Harbor, WA

SITE CODE - PSEH

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 47° 58.42'N (Bivalves)
122° 13.72'W

WATER DEPTH - 1.8 meters

47° 58.43'N (Sediments)
122° 14.22'W

LOCATED ON NOS CHART - 18443 (NAD 1983)

SITE DESCRIPTION - The bivalve site is located at the very south end of Everett Harbor. Go to Pier 1 and turn south, and access the beach at the south end of Weyhauser Log Yard.

The sediment site is located about one-half to three-quarters of a mile west of the bivalve site in 91 meters of water. The boat launch is located at the north end of the harbor in the mouth of Snohomish River about 3 miles from the bivalve site.

SAMPLING METHOD - Intertidal, hand collection.

WASHINGTON SITES

SITE - Bellingham Bay, Squalicum Marina Jetty, WA

SITE CODE - BBSM

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - 48° 45.25'N (Bivalves)
122° 29.97'W

WATER DEPTH - 2 meters

48° 44.77'N (Sediments)
122° 30.72'W

LOCATED ON NOS CHART - 18424 (NAD 1983)

SITE DESCRIPTION - Mussels are collected on the jetty forming the southeast edge of Bellingham Marina. Go to the Squalicum Marina Parking Lot near the net storage area. The mussels are located on the south side of the riprap forming the marina jetty.

For sediment collection launch a boat at Bellingham Marina Ramp. The sediment site is approximately 0.25 miles south of marina entrance.

SAMPLING METHOD - Intertidal, hand collection.

SITE - Point Roberts, WA

SITE CODE - PRPR

TARGET SPECIES - *Mytilus edulis* (blue mussel)

SITE CENTER COORDINATES - See below (Bivalves)

WATER DEPTH - 0.3 meters

48° 56.47'N (Sediments)
123° 00.36'W

LOCATED ON NOS CHART - 18421 (NAD 1983)

SITE DESCRIPTION - From the U.S.-Canadian border, follow the freeway to Vancouver and the Isawwassen Ferry, then take the Delta exit and follow the main street in town; as it comes to the edge of town, signs will direct you to Pt. Roberts. NOTE: You must cross the U.S.-Canadian border again, just prior to entering Pt. Roberts.

Mussels are located on a rock reef extending from the intertidal zone, out beyond low water on the west side of the peninsula. In Pt. Roberts, drive past several gas stations and then a convenience store at the main intersection. At the store, turn right and proceed to the end of the road, which terminates on the west-side beach of Pt. Roberts peninsula at a restaurant/tavern named The Breakers. The rock reef is located about one-quarter to one-third mile north of the old dock pilings on the beach near The Breakers. The alternate site for mussels is on the rocks

WASHINGTON SITES

on the east side of Pt. Roberts, about one-half to one mile south along the beach and terminating in a residential area with a concrete bulkhead protecting the east-side beach of Pt. Roberts peninsula. From the end of the road, enter the beach via stairs through the concrete bulkhead, and walk south about one-third to one-half mile to the large rocks located on the beach.

Due to poor survival of mussel populations, PRPR has been sampled at both locations. Following are the coordinates for PRPR for each of the five years:

East Side of Peninsula, 1986:	48° 58.90'N
	123° 01.30'W
West Side of Peninsula, 1987:	48° 59.30'N
	123° 05.30'W
West Side of Peninsula, 1988:	48° 59.30'N
	123° 05.30'W
East Side of Peninsula, 1989:	48° 58.90'N
	123° 01.30'W
East Side of Peninsula, 1990:	48° 58.90'N
	123° 01.30'W

For sediment collection, launch a boat at the Blaine, Washington Boat Basin. Leave the boat basin and head west and north to the mouth of Boundary Bay. The sediment site location is 1.5 miles south of the southeast end of Pt. Roberts in 54 to 108 meters of water, near Buoy 4.

SAMPLING METHOD - Intertidal, hand collection.

WASHINGTON SITES

Benthic Surveillance

SITE - Columbia River, Desdemona Sands, WA

SITE CODE - COLDS

TARGET SPECIES - *Platichthys stellatus* (starry flounder) (1984-1987)

Parophrys vetulus (English sole) (1989)

Leptocottus armatus (Pacific staghorn sculpin) (1984*, 1985*)

NOMINAL SITE CENTER - 46° 13.0'N
123° 56.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 5 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	46° 13.1'	123° 55.8'
1984	B	46° 13.0'	123° 55.6'
1984	C	46° 12.0'	123° 55.2'
1985	A	46° 14.4'	123° 54.1'
1985	B	46° 13.2'	123° 55.6'
1985	C	46° 14.2'	123° 54.8'
1986	A	46° 13.1'	123° 55.6'
1986	B	46° 13.3'	123° 55.4'
1986	C	46° 14.4'	123° 54.2'
1988	A	46° 13.2'	123° 55.6'
1988	B	46° 13.3'	123° 55.3'
1988	C	46° 14.3'	123° 53.9'

LOCATED ON NOS CHART - 18521 (NAD 1927; October 26, 1985)

SITE DESCRIPTION - This site is northwest of Desdemona Sands, south of Fort Columbia State Park, and north of the town of Hammond. The site center is 1.05 nautical miles east of the DESDEMONA SANDS Fl 4sec 23ft 5m marker and, 0.6 nautical miles northeast of the Fl G 4sec "25" marker.

SITE - Puget Sound, Nisqually Reach, WA

SITE CODE - PUGNR

TARGET SPECIES - *Parophrys vetulus* (English sole) (1984-1986, 1989, 1990)

Leptocottus armatus (Pacific staghorn sculpin) (1984*, 1985*)

NOMINAL SITE CENTER - 47° 06.8'N
122° 41.6'W

**WATER DEPTH AT
NOMINAL CENTER** - 27 meters

WASHINGTON SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	47° 07.0'	122° 41.7'
1984	B	47° 07.1'	122° 41.2'
1984	C	47° 07.2'	122° 40.6'
1985	A	47° 06.9'	122° 40.9'
1985	B	47° 06.8'	122° 41.6'
1985	C	47° 06.5'	122° 42.2'
1986	A	47° 06.7'	122° 41.9'
1986	B	47° 06.7'	122° 42.2'
1986	C	47° 06.7'	122° 41.7'
1990	A	47° 06.4'	122° 43.9'
1990	B	47° 06.8'	122° 42.1'
1990	C	47° 06.9'	122° 41.6'

LOCATED ON NOS CHART - 18445 (NAD 1983; January 1990)

SITE DESCRIPTION - The center of activities for this site center lies north of Nisqually Flats and south of Lyle Point on Anderson Island. The site is just northwest of the G "1" Fl G 2.5sec buoy, and 2.21 nautical miles east of the G "3" Fl 4sec marker.

SITE - Puget Sound, Commencement Bay, WA

SITE CODE - PUGCB

TARGET SPECIES - *Parophrys vetulus* (English sole) (1984-1986, 1989, 1990)
Hippoglossoides elassodon (flathead sole) (1984, 1985)

NOMINAL SITE CENTER - 47° 17.0'N
 122° 25.3'W

**WATER DEPTH AT
 NOMINAL CENTER** - 40 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	47° 16.7'	122° 25.7'
1984	B	47° 16.8'	122° 25.3'
1984	C	47° 17.1'	122° 25.2'
1985	A	47° 17.3'	122° 25.2'
1985	B	47° 17.0'	122° 25.0'
1985	C	47° 16.6'	122° 25.2'
1986	A	47° 17.0'	122° 24.9'
1986	B	47° 16.7'	122° 25.0'
1986	C	47° 17.1'	122° 25.0'
1989	A	47° 17.0'	122° 24.9'

WASHINGTON SITES

1989	B	47° 16.7'	122° 25.1'
1989	C	47° 17.1'	122° 25.0'
1990	A	47° 17.1'	122° 25.0'
1990	B	47° 16.7'	122° 25.3'
1990	C	47° 17.0'	122° 24.9'

LOCATED ON NOS CHART - 18445 (NAD 1983; January 1990)

SITE DESCRIPTION - The site center is located in the southern end of Commencement Bay, northeast of Tacoma. The site center is just south of the FL Y 4sec marker.

SITE - Puget Sound, Elliott Bay, WA

SITE CODE - PUGEB

TARGET SPECIES - *Parophrys vetulus* (English sole) (1984-1986, 1989, 1990)
Hippoglossoides elassodon (flathead sole) (1984, 1990, 1985*)

NOMINAL SITE CENTER - 47° 36.0'N
 122° 21.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 35 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	47° 35.5'	122° 21.4'
1984	B	47° 35.4'	122° 21.6'
1984	C	47° 35.5'	122° 20.8'
1985	A	47° 35.5'	122° 21.0'
1985	B	47° 35.5'	122° 21.5'
1985	C	47° 35.7'	122° 21.1'
1986	A	47° 35.4'	122° 21.8'
1986	B	47° 35.4'	122° 21.2'
1986	C	47° 35.5'	122° 20.8'
1989	A	47° 35.4'	122° 21.0'
1989	B	47° 35.4'	122° 20.8'
1990	A	47° 35.4'	122° 21.8'
1990	B	47° 35.4'	122° 21.4'
1990	C	47° 35.4'	122° 20.9'

LOCATED ON NOS CHART - 18449 (NAD 1983; May 27, 1989)

SITE DESCRIPTION - This site is located north of Harbor Island and east of Duwamish Head. The site center is 1.55 nautical miles northeast of the Fl 2.5sec 15ft 18m HORN (B(2) 20s) at the tip of Duwamish Head and, southeast of the privately maintained Fl 2.5sec 25ft 3m marker, which is west of Seattle.

124°36'W

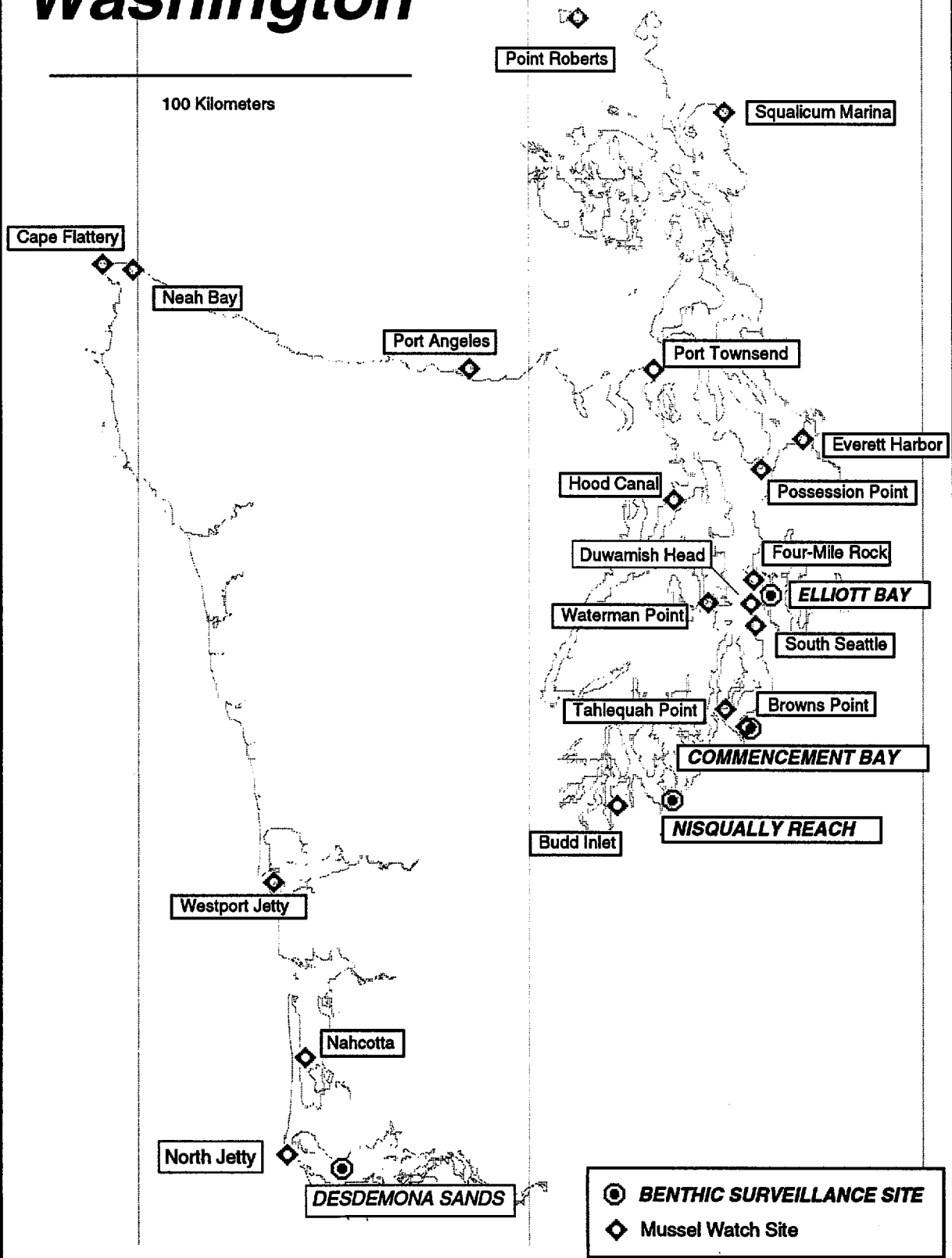
123°12'W

Washington

100 Kilometers

48°00'N

46°30'N



NATIONAL STATUS & TRENDS PROGRAM

Hawaii and Alaska



+ Mussel Watch Project
◆ Benthic Surveillance Project

HAWAII SITES

Mussel Watch

SITE - Nawiliwili Harbor, Kauai, HI

SITE CODE - KAU1

TARGET SPECIES - *Ostrea sandwicensis* (Hawaii oyster)

SITE CENTER COORDINATES - 21° 57.40'N
159° 21.35'W

WATER DEPTH - 0.5 meter

LOCATED ON NOS CHARTS - 19381 and 19383 (both NAD 1927)

SITE DESCRIPTION - The sampling site is situated west of the east breakwater of Nawiliwili Harbor. The oysters are attached to the rocks and concrete rubble.

SAMPLING METHODS - Intertidal hand collection. Sediments were collected via snorkeling using a metal tube that is open at both ends. The tube is inserted into the sediment, and the exposed end of the tube is capped. While the tube is in the sediment, sediment is scooped away from the outside wall, and a cap is positioned underneath. This maneuver is performed at a depth of 8-10 ft. The sample container is brought to the surface, and the sample fractions are collected. The sediment is taken from the surface of the sample; sediment that has contacted the metal sides is not collected.

SITE - Barber's Point, Oahu, Barber's Point Harbor, HI

SITE CODE - BPBP

TARGET SPECIES - *Ostrea sandwicensis* (Hawaii oyster)

SITE CENTER COORDINATES - 21° 19.50'N (Bivalves)
158° 07.45'W

WATER DEPTH - 0.1 meter

21° 19.50'N (Sediments)
158° 07.45'W

LOCATED ON NOS CHART - 19357 (NAD 1927)

SITE DESCRIPTION - The site is located in Barbers Point Harbor at the southwest corner of Oahu Island.

From Honolulu, travel west on Interstate Highway Route H-1. Turn south onto Kalaeloa Boulevard (Route 95). At the intersection of Malakole Street, turn right into the James Campbell Industrial Park. Travel to the end of the paved road and continue onto the dirt road, toward the west end of the harbor entrance.

HAWAII SITES

The site center is the northeast corner of the more easterly concrete barge dock. The tidal range in this vicinity is relatively small (1 foot). Therefore, the oysters are exposed for a short period of time. These factors necessitate that snorkeling gear be used to aid in the collection of specimens. Because of the small size of the specimens, 70 specimens are collected for metals, 70 specimens are collected for organics (at each site), and 10 specimens are collected for gonadal indices.

Sediments are sampled using a boat.

SAMPLING METHODS - Intertidal, hand collection. Snorkeling gear and inner-tube were also used.

SITE - Honolulu Harbor, Keehi Lagoon, HI

SITE CODE - HHKL

TARGET SPECIES - *Ostrea sandvicensis* (Hawaii oyster)

SITE CENTER COORDINATES - 21° 19.15'N (Bivalves) **WATER DEPTH** - 0.1 meter
157° 53.30'W

21° 18.15'N (Sediments)
157° 53.30'W

LOCATED ON NOS CHARTS - 19357, 19364, and 19367 (all NAD 1927)

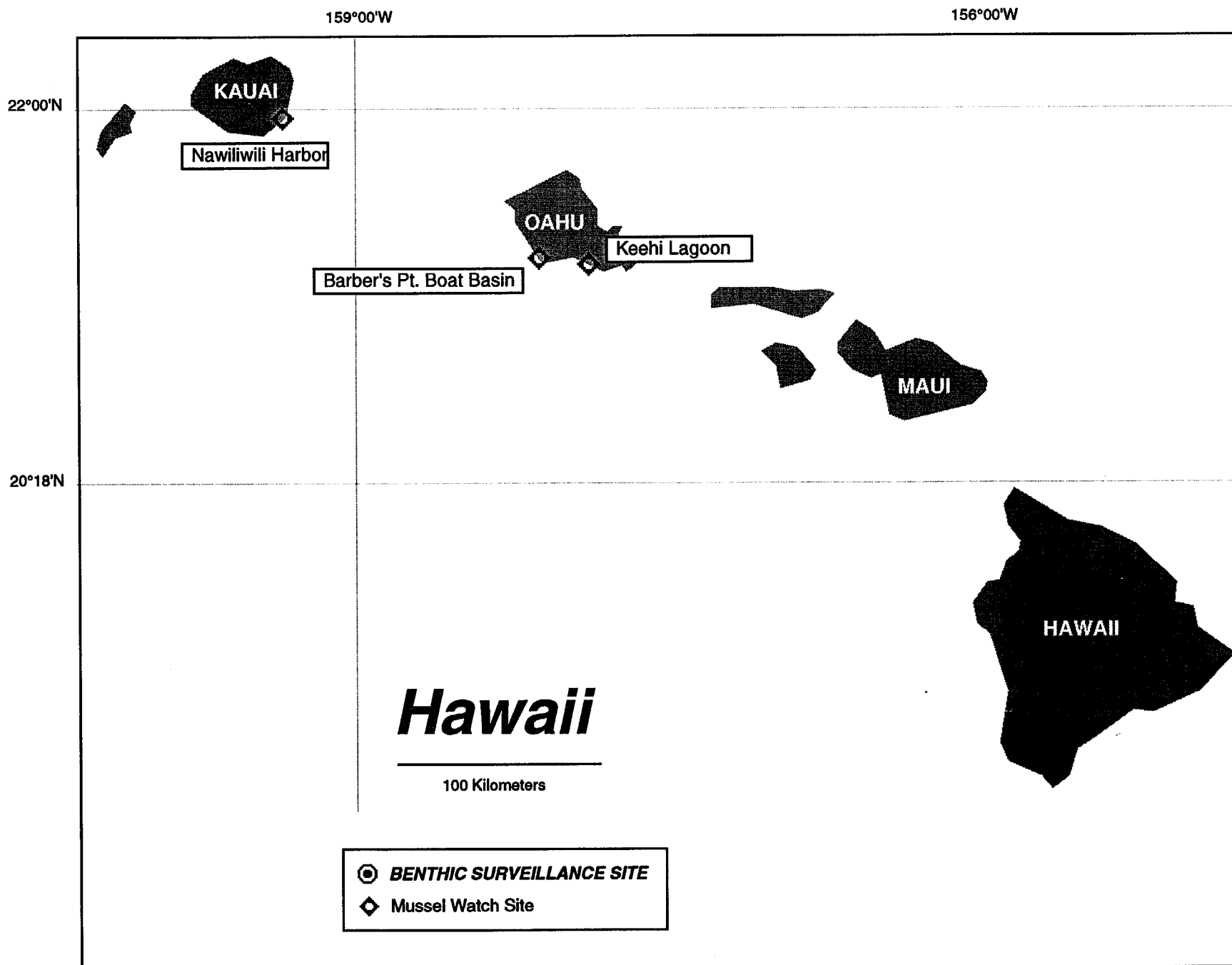
SITE DESCRIPTION - The site is located 2 miles east of the airport in the Kapalama Basin, adjacent to the Keehi Lagoon. Access to the site is through the University of Hawaii, Department of Oceanography, Marine Facility staging area.

Travel Nimitz Highway (Route 92) to the Sand Island Access Road (Route 64). Drive south toward Sand Island and turn left (east) at the gate beyond Kapalama Military Reservation. The gate is manned by a security guard. Drive toward the ship dock and around to the east side of the research vessel dock. The unpaved road dead-ends at a black sand embankment.

The sampling site is the area of the numerous old concrete pilings. The site center is at the end of the path, down the embankment, next to the "grounded" boat frame. The discrete oyster stations are the various piling ruins north and south of the site center.

Sediment sampling has been conducted in the Keehi Lagoon. A boat can be launched from the ramp in Keehi Boat Harbor.

SAMPLING METHODS - Intertidal, hand collection.



ALASKA SITES

Mussel Watch

SITE - Port Valdez, Mineral Creek Flats, AK

SITE CODE - PVMC

TARGET SPECIES - *Mytilus edulis* (Blue Mussel)

SITE CENTER COORDINATES - 61° 08.17'N (Bivalves)
146° 27.75'W

WATER DEPTH - 0.5 meter

61° 06.75'N (Sediments)
146° 28.17'W

LOCATED ON NOS CHART - 16707 (NAD 1983)

SITE DESCRIPTION - The site center for bivalves is approximately one-third the distance from the mouth of Gold Creek to the mouth of Mineral Creek. Mussels are found on rocks and boulders near the mouth of Gold Creek, slightly to the east. Mussels are accessed by a small boat, deployed from a larger vessel.

Sediments may be collected from a chartered vessel. Sediments are found slightly south of the bivalve site in 230 meters of water.

SITE - Unakwik Inlet, Siwash Bay, AK

SITE CODE - UISB

TARGET SPECIES - *Mytilus edulis* (Blue Mussel)

SITE CENTER COORDINATES - 60° 57.62'N (Bivalves)
147° 38.67'W

WATER DEPTH - 0.75 meters

60° 57.35'N (Sediments)
147° 39.45'W

LOCATED ON NOS CHART - 16700 (NAD 1983)

SITE DESCRIPTION - The mussel site is on the rocky shoreline forming a cove near the island at the entrance to Siwash Bay. Access is achieved by chartered boat from Valdez, approximately 50 miles from Siwash Bay.

Sediment collections are also made from chartered boat. Sediments are at an approximate depth of 43 meters near the island at the entrance to Siwash Bay.

ALASKA SITES

Benthic Surveillance

SITE - Boca de Quadra, Bacrian Point, AK

SITE CODE - BOCBP

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1986)

Parophrys vetulus (English sole) (1986*)

NOMINAL SITE CENTER - 55° 16.0'N
130° 33.0'W

WATER DEPTH AT
NOMINAL CENTER - 148 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	55° 16.6'	130° 33.0'
1986	B	55° 18.4'	130° 31.0'
1986	C	55° 13.5'	130° 35.4'

LOCATED ON NOS CHART - 17427 (NAD 1927; July 28, 1984)

SITE DESCRIPTION - This site is located in Boca de Quadra, north of Bacrian Point. The site center is 4.5 nautical miles south of the head of Boca de Quadra in the center of the channel.

SITE - Skagway, Skagway River, AK

SITE CODE - SKASR

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1986)

NOMINAL SITE CENTER - 59° 26.6'N
135° 19.7'W

WATER DEPTH AT
NOMINAL CENTER - 70 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	59° 26.6'	135° 19.7'
1986	B	59° 26.9'	135° 19.9'
1986	C	59° 27.8'	135° 20.4'

LOCATED ON NOS CHART - 17317 (NAD 1927; September 3, 1983)

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

ALASKA SITES

SITE DESCRIPTION - This site center is located in the Taiya Inlet, south of the Skagway River and the town of Skagway.

SITE - Nahku Bay, East Side, AK

SITE CODE - NAHES

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1984)

Limanda aspera (yellowfin sole) (1984*)

NOMINAL SITE CENTER - 59° 28.0'N
135° 20.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 18 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	59° 28.6'	135° 20.1'
1984	B	59° 28.4'	135° 20.3'
1984	C	59° 28.2'	135° 20.4'

LOCATED ON NOS CHART - 17317 (NAD 1927; September 3, 1987)

SITE DESCRIPTION - The coordinates place the site center on the east side of Nahku Bay facing north. Nahku Bay is north of Yakutania Point and Skagway, and south of the Taiya River. This site is 0.4 nautical miles north of the mouth of Nahku Bay.

SITE - Lutak Inlet, Chilkoot River Mouth, AK

SITE CODE - LUTCR

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1984, 1986)

Limanda aspera (yellowfin sole) (1984*)

NOMINAL SITE CENTER - 59° 18.7'N
135° 31.5'W

**WATER DEPTH AT
NOMINAL CENTER** - 57 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1984	A	59° 19.1'	135° 32.6'
1984	B	59° 18.7'	135° 31.5'
1984	C	59° 18.4'	135° 30.9'
1986	A	59° 19.1'	135° 32.6'
1986	B	59° 18.7'	135° 31.5'
1986	C	59° 18.4'	135° 30.9'

LOCATED ON NOS CHART - 17317 (NAD 1927; September 3, 1987)

ALASKA SITES

SITE DESCRIPTION - Chilkoot Inlet is to the east of the Lutak Inlet site center. The site center is located on the north side of the inlet, south of the Chilkoot River mouth. It is 2.4 nautical miles northwest of the Army-maintained 2 F G 9 marker, which is at the mouth of the inlet.

SITE - Prince William Sound, Port Valdez, AK

SITE CODE - PWSPV

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1986)
Limanda aspera (yellowfin sole) (1986*)
Parophrys vetulus (English sole) (1986*)

NOMINAL SITE CENTER - 61° 07.0'N
 146° 18.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 30 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	61° 6.7'	146° 16.2'
1986	B	61° 7.6'	146° 26.2'
1986	C	61° 6.3'	146° 38.7'

LOCATED ON NOS CHART - 16707 (NAD 1983; February 25, 1989)

SITE DESCRIPTION - The site center for this site is located on the east end of Port Valdez, southeast of Mineral Creek Island, northeast of Jackson Point, and south of Old Valdez and Valdez Airport. More specifically, the site can be located 0.36 nautical miles southeast of the privately maintained F G 16ft buoy at the end of Mineral Creek Island, and 2.57 nautical miles north-northeast of the QK Fl R 6m marker off of Jackson Point.

SITE - Gulf of Alaska, Kamishak Bay, AK

SITE CODE - GOAKB

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1986, 1988*)
Limanda aspera (yellowfin sole) (1986*)

NOMINAL SITE CENTER - 59° 15.0'N
 153° 42.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 27 meters

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

ALASKA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	59° 12.4'	153° 42.2'
1986	B	59° 11.7'	153° 39.5'
1986	C	59° 10.4'	153° 33.6'

LOCATED ON NOS CHART - 16640 (NAD 1983; May 5, 1990)

SITE DESCRIPTION - This site is located in Kamishak Bay, south of Augustine Island, southeast of Contact Point, and north of Akumwarvik Bay. The site center is 10.8 nautical miles south-southeast of the volcano on Augustine Island, and 10.2 nautical miles southeast of Contact Point.

SITE - Bering Sea, Port Moller, AK

SITE CODE - BERPM

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1986, 1988*)
Limanda aspera (yellowfin sole) (1986*)

NOMINAL SITE CENTER - 56° 03.0'N
 160° 45.0'W

WATER DEPTH AT
 NOMINAL CENTER - 16 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	56° 07.7'	160° 34.4'
1986	B	56° 06.4'	160° 41.0'
1986	C	56° 05.7'	160° 45.0'
1988	A	56° 07.7'	160° 34.2'*
1988	B	56° 06.3'	160° 41.0'*
1988	C	56° 05.6'	160° 45.0'*

LOCATED ON NOS CHART - 16363 (NAD 1983; March 5, 1988)

SITE DESCRIPTION - This site center is located northwest of Port Moller and north of Wolf Point on Walrus Island. It is 7.05 nautical miles northwest of the Fl G 2.5sec 19ft 7m PA marker on Walrus Island.

ALASKA SITES

SITE - Bering Sea, Dutch Harbor, AK

SITE CODE - BERDH

TARGET SPECIES - *Hippoglossoides elassodon* (flathead sole) (1986, 1988*)
Limanda aspera (yellowfin sole) (1984*)
Parophrys vetulus (English sole) (1986*)
Lepidopsetta bilineata (rock sole) (1986*)

NOMINAL SITE CENTER - 53° 54.0'N
 166° 30.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 31 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1986	A	53° 53.6'	166° 29.1'
1986	B	53° 54.0'	166° 29.9'
1986	C	53° 53.4'	166° 30.5'
1988	A	53° 53.9'	166° 30.6'*
1988	B	53° 53.4'	166° 30.3'*
1988	C	53° 53.6'	166° 29.6'*

LOCATED ON NOS CHART - 16528 (NAD 1927, March 17, 1984)

SITE DESCRIPTION - Unalaska Bay in the Iliuliuk Bay is located north of this site center, which is east of Dutch Harbor, northeast of Spithead on Amaknak Island, and west of Mt. Coxcomb. The Dutch Harbor site is 0.50 nautical miles northeast of Fl 4sec 38ft 5m "4" marker off of Spithead and 0.52 nautical miles south of R "2" Fl R 4sec BELL in the Iliuliuk Bay.

SITE - Bering Sea, Kvichak Bay, AK

SITE CODE - BERKB

TARGET SPECIES - *Limanda aspera* (yellowfin Sole) (1986*)

NOMINAL SITE CENTER - 58° 41.0'N
 157° 36.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 5 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	58° 42.0'	157° 35.7'*

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

ALASKA SITES

LOCATED ON NOS CHART - U.S. Geological Survey map 9051, produced August 15, 1970; based on NAD 1927.

SITE DESCRIPTION - The site center is located in Kvichak Bay at the head of the inlet due north of Deadman Sands. It is 4 nautical miles west northwest of the Quick Flashing 20ft Light on the north shore of Kvichak Bay.

SITE - Bering Sea, Yukon River, AK

SITE CODE - BERYR

TARGET SPECIES - *Limanda aspera* (yellowfin sole*)
Liopsetta glacialis (Arctic flounder*)

NOMINAL SITE CENTER - 62° 55.0'N
165° 23.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 16 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	62° 54.2'	165° 24.2'
1988	B	62° 56.4'	165° 22.7'
1988	C	62° 57.2'	165° 23.0'

LOCATED ON NOS CHART - 16240 (NAD 1983; May 12, 1990)

SITE DESCRIPTION - The site center is located west of the Yukon Delta. It is 17.5 nautical miles west-northwest of the Fl 2.5sec light at Kwiguk Pass, and 24 nautical miles southwest of the Fl 4sec light on Nunaktuk Island.

SITE - Norton Sound, Nome, AK

SITE CODE - NORNO

TARGET SPECIES - *Limanda aspera* (yellowfin sole) (1988*)

NOMINAL SITE CENTER - 64° 19.2'N
165° 30.3'W

**WATER DEPTH AT
NOMINAL CENTER** - 20 meters

ALASKA SITES

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	64° 20.3'	165° 30.1'
1988	B	64° 19.2'	165° 30.3'
1988	C	64° 18.2'	165° 31.6'

LOCATED ON NOS CHART - 16200 (NAD 1927; August 7, 1982)

SITE DESCRIPTION - This site is located 10 nautical miles south of the AERO rot W&G light in Nome, and 20 nautical miles east southeast of Sledge Island.

SITE - Bering Sea, Kuskokwim River, AK

SITE CODE - BERKR

TARGET SPECIES - *Liopsetta glacialis* (Arctic flounder) (1986*)
Limanda aspera (yellowfin sole) (1986*)

NOMINAL SITE CENTER - 59° 54.0'N
 162° 15.0'W

**WATER DEPTH AT
 NOMINAL CENTER** - 5 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1988	A	59° 53.9'	162° 15.5'
1988	B	59° 56.1'	162° 13.9'

LOCATED ON NOS CHART - 16300 (NAD 1927; May 4, 1974)

SITE DESCRIPTION - The site center is located south of Kuskokwak Channel. It is 5.5 nautical miles west-southwest of Warehouse Creek, and 12.7 nautical miles south of Eek Island.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

ALASKA SITES

SITE - Chukchi Sea, Red Dog Mine, AK

SITE CODE - CHKRD

TARGET SPECIES - *Platichthys stellatus* (starry flounder) (1987, 1988*)

NOMINAL SITE CENTER - 67° 29.5'N
164° 02.8'W

WATER DEPTH AT
NOMINAL CENTER - 3 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1987	A-C	67° 29.5'	164° 02.8'
1988	A	67° 39.8'	164° 20.9'
1988	B	67° 39.1'	164° 27.9'
1988	C	67° 34.0'	164° 16.2'

LOCATED ON NOS CHART - 16005 (NAD 1927; June 28, 1980)

SITE DESCRIPTION - This site is located north of Kotzebue Sound and Cape Krusenstern, at the foot of Mulgrave Hills.

SITE - Beaufort Sea, Oliktok Point, AK

SITE CODE - BEAOP

TARGET SPECIES - *Myoxocephalus quadricornis* (four-horn sculpin) (1985, 1986)
Pleuronectes glacialis (Arctic flounder) (1985*)
Coregonus sardinella (least cisco) (1985*)

NOMINAL SITE CENTER - 70° 30.0'N
149° 58.0'W

WATER DEPTH AT
NOMINAL CENTER - 2 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	A	70° 30.5'	149° 53.1'
1985	B	70° 30.3'	149° 54.5'
1985	C	70° 30.2'	149° 54.1'
1986	A	70° 30.5'	149° 53.1'
1986	B	70° 30.3'	149° 54.5'
1986	C	70° 30.2'	149° 54.1'

LOCATED ON NOS CHART - 16062 (NAD 1927; March 12, 1983)

ALASKA SITES

SITE DESCRIPTION - Oliktok Point is located in Simpson Lagoon, southwest of Oliktok Point, south of the Spy Islands, southwest of the Thetis Islands, and 1.61 nautical miles west-southwest of the airport towers.

SITE - Beaufort Sea, Prudhoe Bay, AK

SITE CODE - BEAPB

TARGET SPECIES - *Myoxocephalus quadricornis* (four-horn sculpin) (1985, 1986)

NOMINAL SITE CENTER - 70° 21.0'N
147° 57.0'W

**WATER DEPTH AT
NOMINAL CENTER** - 2 meters

LOCATION OF SEDIMENT STATIONS:

SAMPLE YEAR	STATION	LATITUDE (N)	LONGITUDE (W)
1985	A	70° 21.3'	147° 58.0'
1985	B	70° 21.0'	147° 58.0'
1985	C	70° 20.8'	147° 58.1'
1986	A	70° 21.3'	147° 58.0'
1986	B	70° 21.1'	147° 58.0'
1986	C	70° 20.8'	147° 58.1'

LOCATED ON NOS CHART - 16061 (NAD 1983; February 25, 1989)

SITE DESCRIPTION - This site is located on the east side of Main Production Island in the Stefansson Sound, 0.2 nautical miles southeast of the privately maintained Fl R 2.5sec 20ft (July 28 to Oct 21) marker at the end of Main Production Island, and 2.6 nautical miles west of the Fl R 4sec 20ft marker on Satellite Drilling Island.

* An asterisk after a species for the West Coast and Alaska denotes that the species indicated was archived for analysis at a future date.

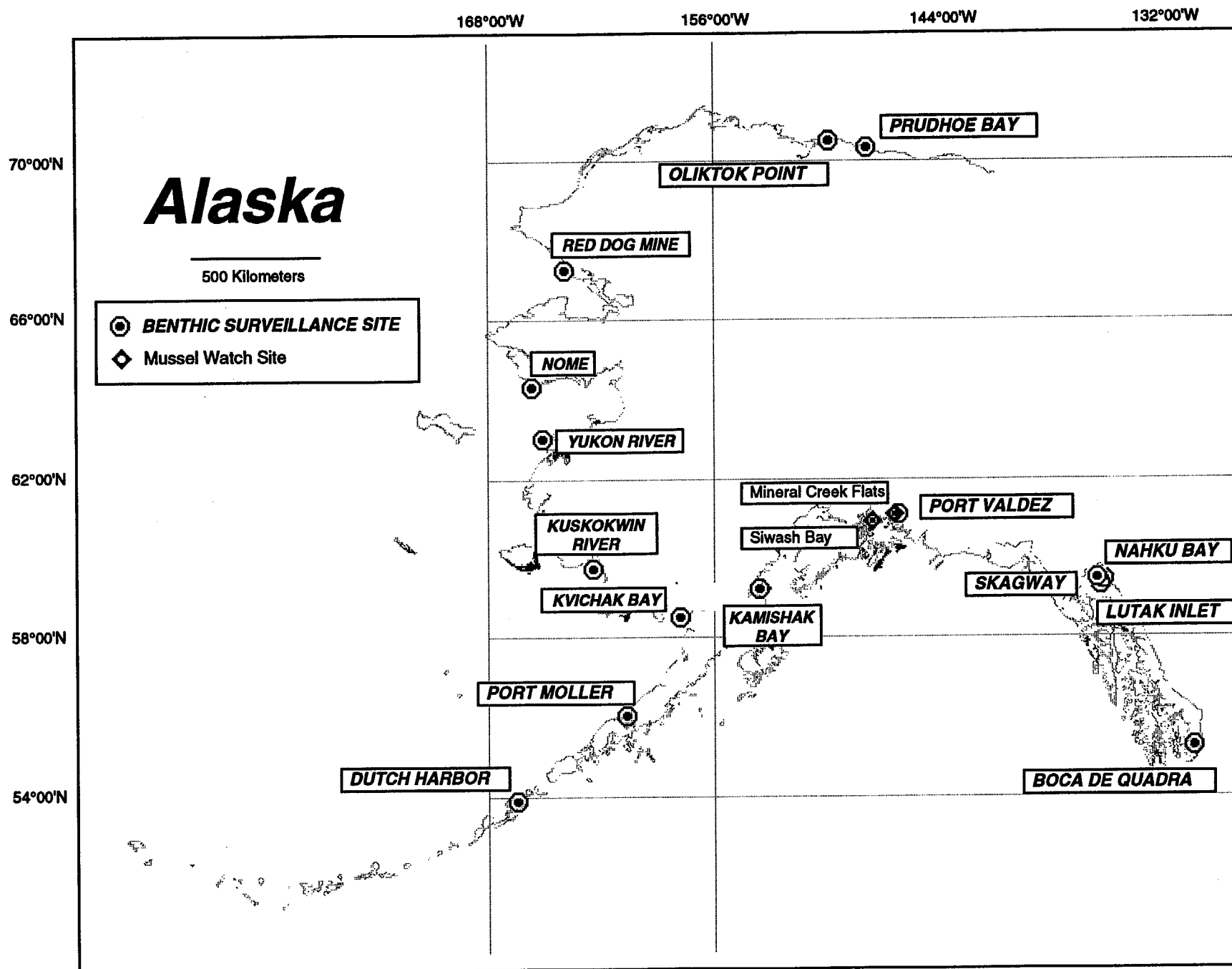


Table 1. National Benthic Surveillance Project Sites

SITE CODE	SITE NAME	STATE	LATITUDE(N)	LONGITUDE (W)	SPECIES *	OTHER CODES USED
MACCI	Machias Bay, Chance Island	ME	44° 38.0'	67° 20.0'	LS	MAC, 2981
MACHI	Machias Bay, Hog Island	ME	44° 40.6'	67° 20.7'	LS	
FRNLP	Frenchmans Bay, Long Porcupine Island	ME	44° 25.0'	68° 10.0'	LS	FRN
PNBCH	Penobscot Bay, Colt Head Island	ME	44° 15.0'	68° 50.0'	LS	PNB, 2951
PNBJI	Penobscot Bay, Job Island	ME	44° 12.8'	69° 00.7'	LS	
PNBII	Penobscot Bay, Islesboro Island	ME	44° 19.6'	68° 51.7'	WF	
CASGC	Casco Bay, Great Chebeague Island	ME	43° 45.0'	70° 05.0'	LS	CSC, 2920
CASCI	Casco Bay, Cousins Island	ME	43° 41.4'	70° 08.0'	LS,WF	2921
JONPN	Johns Bay, Pemaquid Neck	ME	43° 50.5'	69° 31.2'	WF	2941
CAPRI	Cape Elizabeth, Richmond Island	ME	43° 31.9'	70° 16.6'	WF	2919
MERPI	Merrimac River, Plum Island	MA	42° 45.0'	70° 45.0'	WF	MER
SALFP	Salem Harbor, Folger Point	MA	42° 32.2'	70° 49.6'	WF	SAL, 2880
BOSPR	Boston Harbor, President Roads	MA	42° 20.0'	70° 59.0'	WF	BOS
BOSDI	Boston Harbor, Deer Island	MA	42° 19.9'	70° 58.1'	WF	BDI, 2820
BOSQB	Boston Harbor, Quincy Bay	MA	42° 18.4'	70° 58.4'	WF	QUI, 2815
BOSHB	Boston Harbor, Hull Bay	MA	42° 17.1'	70° 54.4'	WF	2810
BOSMR	Boston Harbor, Mystic River	MA	42° 23.2'	71° 03.2'	WF	2830
BUZWI	Buzzards Bay, West Island	MA	41° 35.0'	70° 45.0'	WF	BUZ, 2760
NBHCP	New Bedford Harbor, Clarks Point	MA	41° 35.0'	70° 53.5'	WF	2740
NARCI	Narragansett Bay, Conanicut Island	RI	41° 35.0'	71° 22.0'	WF	NAR
NARPI	Narragansett Bay, Prudence Island	RI	41° 40.4'	71° 21.2'	WF	2720
LISLS	Long Island Sound, Long Sand Shoal	NY	41° 12.0'	72° 20.0'	WF	ELI
LISRP	Long Island Sound, Rocky Point	NY	41° 08.7'	72° 24.7'	WF	ELIS, 2680
LISON	Long Island Sound, Oak Neck Point	NY	40° 58.0'	73° 35.0'	WF	WLI
LISLP	Long Island Sound, Lloyd Point	NY	40° 58.5'	73° 28.9'	WF	WLIS, 2620
RARLB	Raritan Bay, Lower Bay	NJ	40° 28.0'	74° 05.0'	WF	RAR, 2550
RARER	Raritan Bay, East Reach	NJ	40° 29.5'	74° 05.4'	WF	2550

Table 1. National Benthic Surveillance Project Sites

SITE CODE	SITE NAME	STATE	LATITUDE(N)	LONGITUDE (W)	SPECIES *	OTHER CODES USED
RARWR	Raritan Bay, West Reach	NY	40° 30.4'	74° 10.2'	WF	RAR01, 2552
RARGB	Raritan Bay, Gravesend Bay	NY	40° 35.4'	74° 01.6'	WF	RAR02, 2554
RARUB	Raritan Bay, Upper Bay	NY	40° 39.7'	74° 02.8'	WF	RAR03, 2556
GRTSI	Great Bay, Seven Island	NJ	39° 31.0'	74° 23.0'	WF	GRB, 2410
GRTWI	Great Bay, Wells Island	NJ	39° 31.7'	74° 23.6'	WF	
GRTIW	Great Bay Intracoastal Waterway	NJ	39° 26.7'	74° 23.5'	WF	GBIC, 2420
DELBS	Delaware Bay, Brandywine Shoal	DE	39° 00.0'	75° 10.0'	WpF	DEL
DELTS	Delaware Bay, The Shears	DE	38° 52.8'	75° 10.4'	WpF	2390
DELCI	Delaware Bay, Cherry Island Range	DE	39° 42.6'	75° 30.0'	WP	2392
BALFM	Baltimore Harbor, Fort McHenry Channel	MD	39° 14.7'	76° 33.8'	No Fish Collection	BAL
BALBC	Baltimore Harbor, Brewerton Channel	MD	39° 12.5'	76° 31.4'	WP	2345
CHBCR	Chesapeake Bay, Chester River	MD	39° 01.6'	76° 11.9'	WP	2351
CHBGI	Chesapeake Bay, Gibson Island	MD	39° 05.0'	76° 20.0'	SP	UCB, 2350
CHBKI	Chesapeake Bay, Kent Island	MD	39° 01.4'	76° 22.1'	SP	
CHBSI	Chesapeake Bay, Smith Island	MD	37° 55.0'	76° 10.0'	No Fish Collection	MCB
CHBYR	Chesapeake Bay, York River	VA	37° 10.0'	76° 10.0'	AC,SP	LCB, 2349
CHBER	Chesapeake Bay, Elizabeth River	VA	36° 50.8'	76° 18.0'	AC	ELZ
PAMJB	Pamlico Sound, Jones Bay	NC	35° 13.5'	76° 32.1'	AC	PAM, PAM-A, 2280
CHSSC	Charleston Harbor, South Channel	SC	32° 45.4'	79° 54.4'	AC	CHS, CHS-1, CHS-A, 2220
CHSCO	Charleston Harbor, Coastal	SC	32° 50.1'	79° 40.2'	AC	CHS-A, CHO
SAVEI	Savannah River, Elba Island	GA	32° 05.8'	80° 59.8'	AC, HC	SAV, SAV-A, 2215
SAPHP	Sapelo Sound, High Point	GA	31° 32.3'	81° 14.5'	SP	SAP, SAP-1, SAP-A, SSA
SAPBI	Sapelo Sound, Barbour Is. River	GA	31° 34.8'	81° 14.5'	AC	SAP-E, SAP-D, SSE
SAPDH	Sapelo Sound, Dog Hammock	GA	31° 31.9'	81° 17.5'	AC	SAP-A, SAP-B, SSF, 2210
SAPIN	Sapelo Sound, Inlet	GA	31° 32.5'	81° 11.8'	AC, SP*	SAP-D, SAP-C, SSD
SAPSN	Sapelo Sound, South Newport River	GA	31° 38.6'	81° 15.4'	AC	SAP-B, SAP-E, SSB
SAPJC	Sapelo Sound, Johnson Creek	GA	31° 38.9'	81° 11.4'	AC	SAP-C SAP-F

SITE CODE	SITE NAME	STATE	LATITUDE(N)	LONGITUDE (W)	SPECIES *	OTHER CODES USED
SJROP	St. Johns River, Orange Point	FL	30° 09.7'	81° 40.9'	AC	SJR-A, SJA
SJRTR	St. Johns River, Trout River	FL	30° 23.7'	81° 38.7'	No Fish Collection	SJR-B,
SJROR	St. Johns River, Ortega River	FL	30° 16.6'	81° 42.6'	AC	SJR-C, SJC
SJPMC	St. Johns River, W. Mill Cove	FL	30° 23.6'	81° 36.5'	No Fish Collection	SJR-D, SJR-1
SJRPP	St. Johns River, Piney Point	FL	30° 14.4'	81° 39.4'	AC	SJR-E, SJE
SJRAC	St. Johns River, Arlington Channel	FL	30° 21.0'	81° 36.8'	SP, AC	SJR-B, SJB, 2200
SJRQI	St. Johns R., Quarantine Is. Upper Range	FL	30° 23.5'	81° 34.1'	SP, AC	SJR-D, SJD
BISNB	Biscayne Bay, North Bay	FL	25° 48.9'	80° 09.6'	PF	BIS, BIS-A, 2185
BISCK	Biscayne Bay, Chicken Key	FL	25° 36.9'	80° 17.6'	PF	BIS-B
LOTCH	Charlotte Harbor, Cape Haze	FL	26° 49.8'	82° 06.3'	SP	LOT, LOT-A, 2175
TAMTB	Tampa Bay, Northern Tampa Bay	FL	27° 46.8'	82° 34.0'	HC	TAM, TAM-A, 2170
APASG	Apalachicola Bay, St. George Island	FL	29° 38.9'	84° 58.4'	AC,SP	APA, APA-A, 2155
ANDMP	St. Andrews Bay, Military Point	FL	30° 07.6'	85° 38.0'	AC	AND, AND-1, 2154
COCCB	Choctawhatchee Bay, Choctawhatchee Bay	FL	30° 26.4'	86° 20.3'	AC	COC-1, 2152
COCDH	Choctawhatchee Bay, Destin Harbor	FL	30° 23.4'	86° 29.8'	AC	COC-2
PENPB	Pensacola Bay, Pensacola Bay	FL	30° 25.5'	87° 11.2'	AC,SP	PEN, PEN-1, PEN-A, 2151
MOBNP	Mobile Bay, North Point	AL	30° 17.8'	88° 04.8'	AC	MOB, MOB-A, 2150
MOBMR	Mobile Bay, Mobile River	AL	30° 38.2'	87° 59.2'	No Fish Collection	MOB-B
PASPR	Pascagoula River, Pascagoula River	MS	30° 22.8'	88° 34.1'	AC	PAS, PAS-1, PAS-A, 2145
ROURI	Round Island, Round Island	MS	30° 18.4'	88° 36.6'	SP,AC	ROU, ROU-A, 2146
HERHB	Heron Bay, Heron Bay	MS	30° 11.0'	89° 28.5'	AC	HER, HER-A, 2140
MRDSP	Mississippi River, Delta, Southeast Pass	LA	29° 07.2'	89° 04.2'	AC	MRD, MRD-1, MRD-A, 2137
MRDHP	Mississippi River, Delta, Head of Passes	LA	29° 12.6'	89° 16.7'	AC,HC	MRD-C, 2130
BARBP	Barataria Bay, Barataria Pass	LA	29° 19.2'	89° 56.4'	AC	BAR, BAR-1, BAR-A, 2125
CALPL	Calcasieu River, Fren Lake	LA	30° 11.6'	93° 17.1'	AC,HC	CAL-A, 2147
CALWC	Calcasieu River, West Cove	LA	29° 52.4'	93° 22.2'	AC,HC	CAL-B, 2148
CALBI	Calcasieu River, Bayou d' Inde	LA	30° 12.6'	97° 18.1'	HC	CAL-C, 2149

Table 1. National Benthic Surveillance Project Sites

SITE CODE	SITE NAME	STATE	LATITUDE(N)	LONGITUDE (W)	SPECIES *	OTHER CODES USED
GALEB	Galveston Bay, East Bay	TX	29° 27.3'	94° 42.8'	AC,HC, BD,RD	GAL-A, GAA
GALTC	Galveston Bay, Texas City	TX	29° 21.6'	94° 52.4'	AC	GAL-B, GAB
GALMP	Galveston Bay, Morgans Point	TX	29° 42.0'	94° 59.8'	AC,RD	GAL-C, GAL-2, GAC, 2080
GALEP	Galveston Bay, Eagle Point	TX	29° 29.9'	94° 53.7'	AC,SP,ST	GAL, GAL-D, 2085 GAL-1, GAD
GALTB	Galveston Bay, Trinity Bay	TX	29° 36.4'	94° 45.5'	AC	GAL-E, GAE
GALBB	Galveston Bay, Boggy Bayou	TX	29° 44.4'	95° 06.8'	AC	GAL-F, GAF
GALGB	Galveston Bay, Greens Bayou	TX	29° 44.6'	95° 09.8'	AC,SP,ST	GAL-G, GAL-3, GAG, 2075
GALGI	Galveston Bay, Goat Islands	TX	29° 44.9'	95° 03.8'	AC	GAL-H, GAL-4, GAH, 2070
GALCL	Galveston Bay, Clear Lake	TX	29° 33.3'	95° 02.7'	AC	GAL-I, GAL-5, GAI
LAVLB	Lavaca Bay, Lavaca Bay	TX	28° 38.8'	96° 36.0'	AC	LAV, LAV-A, 2055
LAVPC	Lavaca Bay, Point Comfort	TX	28° 39.3'	96° 34.6'	BD,RD, ST,XT,HC	LAV-B, 2050
SABSB	San Antonio Bay, San Antonio Bay	TX	28° 13.2'	96° 46.4'	AC	SAB, SAB-A, 2040
CCBLR	Corpus Christi Bay, Long Reef	TX	27° 49.6'	97° 17.4'	AC,SP	CCB, CCB-A, 2030
CCBCC	Corpus Christi Bay, Corpus Christi Channel	TX	27° 48.8'	97° 24.2'	No Fish Collection	CCB-B, 2031
LLMLH	Lower Laguna Madre, Laguna Heights	TX	26° 06.5'	97° 15.4'	AC	LLM, LLM-A, 2010
SDBOU	San Diego Bay, Outside	CA	32° 38.0'	117° 11.0'	HT	SDF, 150
MIBOU	Mission Bay, Outside	CA	32° 47.1'	117° 15.5'	BC	OMB, MBO, 162
SDBNC	San Diego Bay, National City	CA	32° 40.1'	117° 07.6'	BSB	NAT, 105
SDBTE	San Diego Bay, Twenty Eighth Street	CA	32° 41.0'	117° 08.0'	BC,BSB,SSB	SDA, 101
SDBNO	San Diego Bay, North	CA	32° 43.0'	117° 11.0'	WC	NSD, 120
SDBHI	San Diego Bay, Harbor Island	CA	32° 43.4'	117° 12.7'	WC	WHI, 110
SDBSI	San Diego Bay, Shelter Island	CA	32° 42.5'	117° 13.7'	BC	SHI, 115
OCEOU	Oceanside Harbor, Outside	CA	33° 11.6'	117° 23.7'	QF	OCA
DANOU	Dana Point Harbor, Outside	CA	33° 27.0'	117° 41.0'	BSB,HT,WC	DAN, 200

SITE CODE	SITE NAME	STATE	LATITUDE(N)	LONGITUDE (W)	SPECIES *	OTHER CODES USED
DANIH	Dana Point, Inside Harbor	CA	33° 27.5'	117° 42.1'	BSB	DANI, DPI, 205
SPBSB	San Pedro Bay, Seal Beach	CA	33° 44.0'	118° 08.0'	WC	SEA, 303
SPBLB	San Pedro Bay, Long Beach	CA	33° 44.0'	118° 10.0'	WC	LNB, 302
SPBOH	San Pedro Bay, Outer Harbor	CA	33° 42.6'	118° 15.4'	WC	SPB, 301
SPBCC	San Pedro Bay, Cerritos Channel	CA	33° 45.7'	118° 15.3'	WC	CER, 300
SPBOU	San Pedro Bay, Outside	CA	33° 42.0'	118° 15.7'	WC, HT	SPC, 320
SMBMB	Santa Monica Bay, Manhattan Beach	CA	33° 53.0'	118° 26.0'	HT	SMB, 340
SMBWE	Santa Monica Bay, West	CA	33° 56.0'	118° 34.0'	HT	SMW, 360
SMBSE	Santa Monica Bay, Southeast	CA	33° 47.5'	118° 27.0'	HT, WC	SMSE, 364
SMBSO	Santa Monica Bay, South	CA	33° 52.5'	118° 27.0'	HT	SMS, 362
SMBNO	Santa Monica Bay, North	CA	33° 59.3'	118° 35.9'	HT	SMN, 366
SMBDE	Santa Monica Bay, Deep	CA	33° 55.6'	118° 45.2'	No fish Collection	SMD, 380
SLUOB	San Luis Obispo	CA	35° 06.1'	120° 45.9'	WC	
ESTBY	Estero Bay	CA	35° 21.5'	121° 53.2'	No fish Collection	
MONIH	Monterey Bay, Indian Head Beach	CA	36° 38.0'	121° 51.0'	ES	MON, 500
MONML	Monterey Bay, Moss Landing	CA	36° 48.0'	121° 48.0'	ES,SF	MOS, 510
FARIS	Farallon Islands	CA	37° 39.4'	123° 03.5'	No fish Collection	
SFBHP	San Francisco Bay, Hunters Point	CA	37° 42.0'	122° 22.0'	WC,SF	HUN, 670
SFBRC	San Francisco Bay, Redwood City	CA	37° 33.4'	122° 11.2'	WC	RED, 676
SFBOA	San Francisco Bay, Oakland Entrance	CA	37° 47.5'	122° 20.3'	WC,PSS	
SFBOE	San Francisco Bay, Oakland Estuary	CA	37° 47.0'	122° 21.0'	WC	OAK, 632
SFBSS	San Francisco Bay, Southampton Shoal	CA	37° 53.0'	122° 24.0'	WC,SF	SHS, 630
SFBCC	San Francisco Bay, Castro Creek	CA	37° 58.8'	122° 24.8'	SF	CCR, 603
SFBSP	San Francisco Bay, San Pablo Bay	CA	38° 03.0'	122° 17.0'	SF	PAB, 601
SFBIC	San Francisco Bay, Islais Creek Channel	CA	37° 44.9'	122° 22.1'	No fish Collection	
BODNO	Bodega Bay, North	CA	38° 18.0'	123° 02.0'	WC,ES,SF	BOD, 700
HUMII	Humboldt Bay, Indian Island	CA	40° 49.0'	124° 10.0'	SF	HMB, 800

Table 1. National Benthic Surveillance Project Sites

SITE CODE	SITE NAME	STATE	LATITUDE(N)	LONGITUDE (W)	SPECIES *	OTHER CODES USED
COONB	Coos Bay, North Bend	OR	43° 24.0'	124° 13.0'	SF,ES	COO, 900
COLYB	Columbia River, Youngs Bay	OR	46° 10.0'	123° 50.0'	SF	YNB, 1010
COLDS	Columbia River, Desdemona Sands	WA	46° 13.0'	123° 56.0'	SF	COL, 1000
PUGNR	Puget Sound, Nisqually Reach	WA	47° 06.8'	122° 41.6'	ES	NIS, 1100
PUGCB	Puget Sound, Commencement Bay	WA	47° 17.0'	122° 25.3'	ES,FS	COM, 1140
PUGEB	Puget Sound, Elliott Bay	WA	47° 36.0'	122° 21.0'	ES,FS	ELL, 1170
BOCBP	Boca de Quadra, Bacrian Point	AK	55° 16.0'	130° 33.0'	FS	BDQ, 1230
SKASR	Skagway, Skagway River	AK	59° 26.6'	135° 19.7'	FS	SKA, 1217
NAHES	Nahku Bay, East Side	AK	59° 28.0'	135° 20.0'	FS	NAH, 1215
LUTCR	Lutak Inlet, Chilkoot River Mouth	AK	59° 18.7'	135° 31.5'	FS	LUT, 1210
PWSPV	Prince William Sound, Port Valdez	AK	61° 07.0'	146° 18.0'	FS	VAL, 1225
GOAKB	Gulf of Alaska, Kamishak Bay	AK	59° 15.0'	153° 42.0'	FS	KAM, 1220
BERPM	Bering Sea, Port Moller	AK	56° 03.0'	160° 45.0'	FS	PTM, 1260
BERDH	Bering Sea, Dutch Harbor	AK	53° 54.0'	166° 30.0'	FS	DUT, 1250
BERKB	Bering Sea, Kvichak Bay	AK	58° 41.0'	157° 36.0'	YfS	KVI, 1262
BERKR	Bering Sea, Kuskokwim River	AK	59° 54.0'	162° 15.0'	AF	KUS, 1264
BERYR	Bering Sea, Yukon River	AK	62° 55.0'	165° 23.0'	YfS,AF	YUK, 1266
NORNO	Norton Sound, Nome	AK	64° 19.2'	165° 30.3'	YfS	NOM, 1268
CHKRD	Chukchi Sea, Red Dog Mine	AK	67° 29.5'	164° 02.8'	SF	RDD, RDG, 1270
BEAOP	Beaufort Sea, Oliktok Point	AK	70° 30.0'	149° 58.0'	FhS	OLI, 1295
BEAPB	Beaufort Sea, Prudhoe Bay	AK	70° 21.0'	147° 57.0'	FhS	END, 1285

*Arctic flounder = AF, Atlantic croaker = AC, barred sandbass = BSB, black croaker = BC, black drum = BD, California halibut = CH, California tonguefish = CTf, diamond turbot = DT, English sole = ES, flathead sole = FS, fourhorn sculpin = FhS, hardhead catfish = HC, hornhead turbot = HT, least cisco = LsC, longhorn sculpin = LS, Pacific staghorn sculpin = PSS, pinfish = PF, queenfish = QF, red drum = RD, rock sole = RS, sand seatrout = ST, spot = SP, spotted sandbass = SSB, spotted seatrout = XT, spotted turbot = SpT, starry flounder = SF, white croaker = WC, white perch = WP, white surf perch = WSP, windowpane flounder = WpF, winter flounder = WF, yellowfin sole = YfS

Table 2. National Benthic Surveillance Project Tissue Site Sampling Years

SITE CODE	SITE LOCATION	STATE	1984**	1985	1986	1987	1988	1989	1990
MACCI	Machias Bay, Chance Island	ME	-	LS	LS	-	-	-	-
MACHI	Machias Bay, Hog Island	ME	-	-	-	LS	-	-	-
FRNLP	Frenchmans Bay, Long Porcupine Island	ME	-	LS	-	-	-	-	-
PNBCH	Penobscot Bay, Colt Head Island	ME	-	LS	LS	-	-	-	-
PNBJI	Penobscot Bay, Job Island	ME	-	-	-	LS	-	-	-
PNBII	Penobscot Bay, Islesboro Island	ME	-	-	-	-	-	-	WF
CASGC	Casco Bay, Great Chebeague Island	ME	WF	LS	LS	-	-	-	-
CASCI	Casco Bay, Cousins Island	ME	-	-	-	LS	-	-	-
JONPN	Johns Bay, Pemaquid Neck	ME	-	-	-	-	-	-	WF
CAPRI	Cape Elizabeth, Richmond Island	ME	-	-	-	-	-	-	WF
MERPI	Merrimac River, Plum Island	MA	WF	WF	-	-	-	-	-
SALFP	Salem Harbor, Folger Point	MA	WF	WF	WF	-	WF	WF	WF
BOSPR	Boston Harbor, President Roads	MA	WF	WF	WF	-	-	-	-
BOSDI	Boston Harbor, Deer Island	MA	-	-	-	WF	WF	WF	WF
BOSQB	Boston Harbor, Quincy Bay	MA	-	-	WF	-	-	WF	WF
BOSHB	Boston Harbor, Hull Bay	MA	-	-	-	-	-	WF	WF
BOSMR	Boston Harbor, Mystic River	MA	-	-	-	-	-	WF	WF
BUZWI	Buzzards Bay, West Island	MA	WF	WF	WF	-	WF	-	WF
NWBCP	New Bedford Harbor, Clarks Point	MA	-	-	-	-	WF	-	-
NARCI	Narragansett Bay, Conanicut Island	RI	WF	WF	WF	-	-	-	-
NARPI	Narragansett Bay, Prudence Island	RI	-	-	-	-	WF	-	WF
LISLS	Long Island Sound, Long Sand Shoal	NY	WF	WF	WF	-	-	-	-
LISRP	Long Island Sound, Rocky Point	NY	-	-	-	-	WF	-	-
LISON	Long Island Sound, Oak Neck Point	NY	WF	WF	WF	-	-	-	-
LISLP	Long Island Sound, Lloyd Point	NY	-	-	-	-	WF	-	WF
RARWR	Raritan Bay, West Reach	NY	-	-	-	-	-	WF	WF

Table 2. National Benthic Surveillance Project Tissue Site Sampling Years

SITE CODE	SITE LOCATION	STATE	1984**	1985	1986	1987	1988	1989	1990
RARGB	Raritan Bay, Gravesend Bay	NY	-	-	-	-	-	WF	WF
RARUB	Raritan Bay, Upper Bay	NY	-	-	-	-	-	WF	WF
RARLB	Raritan Bay, Lower Bay	NJ	-	WF	WF	WF	-	-	-
RARER	Raritan Bay, East Reach	NJ	-	-	-	-	WF	WF	WF
GRTSI	Great Bay, Seven Island	NJ	-	WF	WF	-	-	-	-
GRTWI	Great Bay, Wells Island	NJ	-	-	-	WF	-	-	-
GRTIW	Great Bay Intracoastal Waterway	NJ	-	-	-	-	WF	WF	-
DELBS	Delaware Bay, Brandywine Shoal	DE	WpF	WpF	WpF	-	-	-	-
DELTS	Delaware Bay, The Shears	DE	-	-	-	WpF	-	-	-
DELCI	Delaware Bay, Cherry Island Range	DE	-	-	-	-	-	-	WP
BALBC	Baltimore Harbor, Brewerton Channel	MD	-	-	-	-	-	WP	WP
CHBCR	Chesapeake Bay, Chester River	MD	-	-	-	-	-	WP	WP
CHBCI	Chesapeake Bay, Gibson Island	MD	-	SP	SP	-	-	-	-
CHBKI	Chesapeake Bay, Kent Island	MD	-	-	-	SP	-	-	-
CHBYR	Chesapeake Bay, York River	VA	AC	SP	SP, AC	-	-	-	-
CHBER	Chesapeake Bay, Elizabeth River	VA	-	-	AC	-	-	-	-
PAMJB	Pamlico Sound, Jones Bay	NC	AC	AC	AC	-	AC	-	AC
CHSSC	Charleston Harbor, South Channel	SC	AC	-	AC	AC	-	AC	-
CHSCO	Charleston Harbor, Coastal	SC	-	AC	-	-	-	-	-
SAVEI	Savannah River, Elba Island	GA	-	-	-	-	-	-	AC, HC
SAPHP	Sapelo Sound, High Point	GA	SP	-	-	-	-	-	-
SAPBI	Sapelo Sound, Barbour Is. River	GA	-	-	-	AC	-	-	-
SAPDH	Sapelo Sound, Dog Hammock	GA	-	-	-	AC	-	AC#	-
SAPIN	Sapelo Sound, Inlet	GA	-	AC, SP*	AC	AC	-	AC#	-
SAPSN	Sapelo Sound, South Newport River	GA	-	-	-	AC	-	-	-
SAPJC	Sapelo Sound, Johnson Creek	GA	-	-	-	AC	-	-	-

SITE CODE	SITE LOCATION	STATE	1984**	1985	1986	1987	1988	1989	1990
SJROP	St. Johns River, Orange Point	FL	-	-	-	AC	-	-	-
SJROR	St. Johns River, Ortega River	FL	-	-	-	AC	-	-	-
SJRPP	St. Johns River, Piney Point	FL	-	-	AC	AC	-	-	-
SJRAC	St. Johns River, Arlington Channel	FL	SP#	AC, SP	-	AC	-	AC	-
SJRQI	St. Johns R., Quarantine Is. Upper Range	FL	SP#	-	-	AC	-	-	-
BISNB	Biscayne Bay, North Bay	FL	-	-	-	-	-	-	PF
BISCK	Biscayne Bay, Chicken Key	FL	-	-	-	-	-	-	PF
LOTCH	Charlotte Harbor, Cape Haze	FL	SP	SP	SP	-	SP	-	-
TAMTB	Tampa Bay, Northern Tampa Bay	FL	-	-	-	-	-	HC	-
APASG	Apalachicola Bay, St. George Island	FL	AC, SP	AC	AC	-	AC	-	AC
ANDMP	St. Andrew Bay, Military Point	FL	-	-	-	-	-	AC	-
COCCB	Choctawhatchee Bay, Choctawhatchee B.	FL	-	-	-	-	-	AC	-
COCDH	Choctawhatchee Bay, Destin Harbor	FL	-	-	-	-	-	AC	-
PENPB	Pensacola Bay, Pensacola Bay	FL	-	AC, SP*	AC	AC	-	AC	-
MOBNP	Mobile Bay, North Point	AL	AC	AC	AC	-	AC	-	AC
PASPR	Pascagoula River, Pascagoula River	MS	-	-	-	AC	-	AC	-
ROURI	Round Island, Round Island	MS	SP	AC	-	-	-	-	-
HERHB	Heron Bay, Heron Bay	MS	AC	AC	AC	-	AC	-	-
MRDSP	Mississippi River Delta, Southeast Pass	LA	AC	AC	AC	AC	-	AC	-
MRDHP	Mississippi River Delta, Head of Passes	LA	-	-	-	-	-	-	AC,HC
BARBP	Barataria Bay, Barataria Pass	LA	AC	AC	-	AC	-	AC	-
CALPL	Calcasieu River, Prien Lake	LA	-	-	-	-	-	-	AC,HC
CALWC	Calcasieu River, West Cove	LA	-	-	-	-	-	-	AC,HC
CALBI	Calcasieu River, Bayou d Inde	LA	-	-	-	-	-	-	HC
GALEB	Galveston Bay, East Bay	TX	-	-	-	AC	-	-	AC,HC,BD,RD
GALTC	Galveston Bay, Texas City	TX	-	-	-	AC	-	-	-

Table 2. National Benthic Surveillance Project Tissue Site Sampling Years

SITE CODE	SITE LOCATION	STATE	1984**	1985	1986	1987	1988	1989	1990
GALMP	Galveston Bay, Morgans Point	TX	-	-	-	AC	AC	-	AC, RD
GALEP	Galveston Bay, Eagle Point	TX	AC	AC	AC	AC	AC	AC, SP, ST	AC
GALTB	Galveston Bay, Trinity Bay	TX	-	-	-	AC	-	-	-
GALBB	Galveston Bay, Boggy Bayou	TX	-	-	-	AC	-	-	-
GALGB	Galveston Bay, Greens Bayou	TX	-	-	-	-	AC	AC, SP, ST	-
GALGI	Galveston Bay, Goat Islands	TX	-	-	-	-	AC	-	-
GALCL	Galveston Bay, Clear Lake	TX	-	-	-	-	AC	-	-
LAVLB	Lavaca Bay, Lavaca Bay	TX	-	-	-	-	AC	-	AC
LAVPC	Lavaca Bay, Point Comfort	TX	-	-	-	-	BD, RD, XT	-	HC, BD, RD
SABSB	San Antonio Bay, San Antonio Bay	TX	AC	AC	AC	-	-	-	-
CCBLR	Corpus Christi Bay, Long Reef	TX	AC	AC	AC	-	AC	-	AC, SP
LLMLH	Lower Laguna Madre, Laguna Heights	TX	AC	AC	AC	-	AC	-	-
SDBOU	San Diego Bay, Outside	CA	HT, SpT*	HT, SpT*	-	-	-	-	-
MIBOU	Mission Bay, Outside	CA	-	-	-	-	BC, WC*	WC*	BC*, SpT*
SDBNC	San Diego Bay, National City	CA	-	-	-	BSB	BSB	-	-
SDBTE	San Diego Bay, Twenty Eighth Street	CA	BSB, DT	BSB, SSB*	BSB	SSB, BSB	BSB	SSB, BC	-
SDBNO	San Diego Bay, North	CA	-	-	BSB, DT, WC	WC, SpT, BSB	WC, BC, CH*	WC, BC	-
SDBHI	San Diego Bay, Harbor Island	CA	-	-	-	WC	WC	-	-
SDBSI	San Diego Bay, Shelter Island	CA	-	-	-	BC	BC	BC, SSB*	-
OCEOU	Oceanside Harbor, Outside	CA	-	-	-	-	-	-	QF
DANOU	Dana Point Harbor, Outside	CA	BSB, HT, WC	BSB, HT, WC, CTF*, WSP*, SpT*	BSB, HT, WC	WC	BSB, WC, HT, CH*	WC, HT	WC, HT, CH*
DANIH	Dana Point, Inside Harbor	CA	-	-	-	BSB	BSB	-	-
SPBSB	San Pedro Bay, Seal Beach	CA	WC, HT, SpT*, CTF*	-	-	-	-	-	WC, CH*, SpT*
SPBLB	San Pedro Bay, Long Beach	CA	-	WC, CTF*	WC	WC	-	WC	WC, QF*
SPBOH	San Pedro Bay, Outer Harbor	CA	-	WC, CTF*	WC	WC	WC, CH*	WC	WC
SPBCC	San Pedro Bay, Cerritos Channel	CA	-	-	-	WC	WC*	WC	WC

SITE CODE	SITE LOCATION	STATE	1984**	1985	1986	1987	1988	1989	1990
SPBOU	San Pedro Bay, Outside	CA	HT, WC, SpT*, CTP	-	-	-	-	-	-
SMBMB	Santa Monica Bay, Manhattan Beach	CA	HT, SpT*	WC, HT, SpT*	-	-	-	-	-
SMBWE	Santa Monica Bay, West	CA	-	-	HT, ES*, WC*	-	HT, ES*	HT	HT, ES*
SMBSE	Santa Monica Bay, Southeast	CA	-	-	-	-	-	HT, WC*	HT, WC
SMBNO	Santa Monica Bay, North	CA	-	-	-	-	-	HT	HT
SLUOB	San Luis Obispo	CA	-	-	-	-	WC*	-	-
MONIH	Monterey Bay, Indian Head Beach	CA	-	ES, CT*	ES	-	-	-	ES, HT*
MONML	Monterey Bay, Moss Landing	CA	-	-	ES	-	-	-	-
SFBHP	San Francisco Bay, Hunters Point	CA	SF, WC*, PSS*	WC, PSS*	WC, SF	WC, SF	WC	WC, ES	WC, SF, ES*
SFBRC	San Francisco Bay, Redwood City	CA	-	-	-	WC	WC	-	-
SFBOA	San Francisco Bay, Oakland Entrance	CA	WC, PSS*	-	-	-	-	-	-
SFBOE	San Francisco Bay, Oakland Estuary	CA	-	-	WC	-	WC	WC	WC
SFBSS	San Francisco Bay, Southampton Shoal	CA	SF, WC*, PSS*	SF, WC*	SF, DT*	SF, WC*	SF, WC*	ES	WC, ES*
SFBCC	San Francisco Bay, Castro Creek	CA	-	-	-	SF	SF, WC*	-	-
SFBSP	San Francisco Bay, San Pablo Bay	CA	SF, PSS*	SF, PSS*	SF	SF	WC	-	-
BODNO	Bodega Bay, North	CA	WC, SF, PSS*	WC, ES, SF, PSS*	WC, ES, SF	WC, ES, SF	WC, SF	WC, ES	WC, ES, SF
HUMII	Humboldt Bay, Indian Island	CA	-	SF, PSS*	-	-	-	-	-
COONB	Coos Bay, North Bend	OR	SF, PSS*	SF, ES*, PSS*	SF	-	SF	ES	ES, SF
COLYB	Columbia River, Youngs Bay	OR	-	-	SF	-	-	-	-
COLDS	Columbia River, Desdemona Sands	WA	SF, PSS*	SF, PSS*	SF	-	-	ES	-
PUGNR	Puget Sound, Nisqually Reach	WA	ES, PSS*	ES, PSS*	ES	-	-	ES	ES
PUGCB	Puget Sound, Commencement Bay	WA	ES, FS*	ES, FS*	ES	-	-	ES	ES
PUGEB	Puget Sound, Elliott Bay	WA	ES, FS	ES, FS*	ES	-	-	ES	ES, FS
BOCBP	Boca de Quadra, Bacrian Point	WA	-	-	FS, ES*	-	-	-	-
SKASR	Skagway, Skagway River	AK	-	-	FS	-	-	-	-

Table 2. National Benthic Surveillance Project Tissue Site Sampling Years

SITE CODE	SITE LOCATION	STATE	1984**	1985	1986	1987	1988	1989	1990
NAHES	Nahku Bay, East Side	AK	FS, YfS*	-	-	-	-	-	-
LUTCR	Lutak Inlet, Chilkoot River Mouth	AK	FS, YfS*	-	FS	-	-	-	-
PWSPV	Prince William Sound, Port Valdez	AK	-	-	FS, YfS*, ES*	-	-	-	-
GOAKB	Gulf of Alaska, Kamishak Bay	AK	-	-	FS, YfS*	-	-	-	-
BERPM	Bering Sea, Port Moller	AK	-	-	FS, YfS*	-	FS*	-	-
BERDH	Bering Sea, Dutch Harbor	AK	-	-	FS, YfS*, RS*, ES*	-	FS*	-	-
BERKB	Bering Sea, Kvichak Bay	AK	-	-	-	-	YfS*	-	-
BERKR	Bering Sea, Kuskokwim River	AK	-	-	-	-	AF*	-	-
BERYR	Bering Sea, Yukon River	AK	-	-	-	-	YfS*, AF*	-	-
NORNO	Norton Sound, Nome	AK	-	-	-	-	YfS*	-	-
CHKRD	Chukchi Sea, Red Dog Mine	AK	-	-	-	SF	SF*	-	-
BEAOP	Beaufort Sea, Oliktok Point	AK	-	FhS, ArF*, LsC*	FhS	-	-	-	-
BEAPB	Beaufort Sea, Prudhoe Bay	AK	-	FhS	FhS	-	-	-	-

* indicates samples were archived by the NMFS

indicates adjacent site samples were composited

**Artic flounder = AF, Atlantic croaker = AC, barred sandbass = BSB, black croaker = BC, black drum = BD, California halibut = CH, California tonguefish = CTf, diamond turbot = DT, English sole = ES, flathead sole = FS, fourhorn sculpin = FhS, hardhead catfish = HC, hornyhead turbot = HT, least cisco = LsC, longhorn sculpin = LS, Pacific staghorn sculpin = PSS, pinfish = PF, queenfish = QF, red drum = RD, rock sole = RS, sand seatrout = ST, spot = SP, spotted sandbass = SSB, spotted seatrout = XT, spotted turbot = SpT, starry flounder = SF, white croaker = WC, white perch = WP, white surf perch = WSP, windowpane flounder = WpF, winter flounder = WF, yellowfin sole = YfS

Table 3. National Benthic Surveillance Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION	STATE	YEARS						
MACCI	Machias Bay, Chance Island	ME	84	85	86			89	
MACHI	Machias Bay, Hog Island	ME				87			
FRNLP	Frenchmans Bay, Long Porcupine Island	ME		85	86				
PNBCH	Penobscot Bay, Colt Head Island	ME		85	86				
PNBJI	Penobscot Bay, Job Island	ME				87			
PNBII	Penobscot Bay, Islesboro Island	ME							90
CASCC	Casco Bay, Great Chebeague Island	ME	84	85	86				
CASCI	Casco Bay, Cousins Island.	ME				87		89	
JONPN	Johns Bay, Pemaquid Neck	ME							90
CAPRI	Cape Elizabeth, Richmond Island	ME							90
MERPI	Merrimac River, Plum Island	MA	84	85					
SALFP	Salem Harbor, Folger Point	MA	84	85	86		88	89	90
BOSPR	Boston Harbor, President Roads	MA	84	85	86				
BOSDI	Boston Harbor, Deer Island	MA				87	88	89	90
BOSQB	Boston Harbor, Quincy Bay	MA			86			89	90
BOSHB	Boston Harbor, Hull Bay	MA						89	90
BOSMR	Boston Harbor, Mystic River	MA						89	90
BUZWI	Buzzards Bay, West Island	MA	84	85	86		88		90
NWBCP	New Bedford Harbor, Clarks Point	MA					88		
NARCI	Narragansett Bay, Conanicut Island	RI	84	85	86				
NARPI	Narragansett Bay, Prudence Island	RI					88		90
LISLS	Long Island Sound, Long Sand Shoal	NY	84	85	86				
LISRP	Long Island Sound, Rocky Point	NY					88		
LISON	Long Island Sound, Oak Neck Point	NY	84	85	86				
LISLP	Long Island Sound, Lloyd Point	NY					88		90
RARLB	Raritan Bay, Lower Bay	NY	84	85	86	87			

Table 3. National Benthic Surveillance Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION	STATE	YEARS			
RARER	Raritan Bay, East Reach	NY		88	89	90
RARWR	Raritan Bay, West Reach	NY			89	90
RARGB	Raritan Bay, Gravesend Bay	NY			89	90
RARUB	Raritan Bay, Upper Bay	NY			89	90
GRTSI	Great Bay, Seven Island	NJ	85	86		
GRTWI	Great Bay, Wells Island	NJ			87	
GRTIW	Great Bay Intracoastal Waterway	NJ			88	89
DELBS	Delaware Bay, Brandywine Shoal	DE	84	85	86	
DELTS	Delaware Bay, The Shears	DE			87	
DELCI	Delaware Bay, Cherry Island Range	DE				90
BALFM	Baltimore Harbor, Fort McHenry Channel	MD			86	
BALBC	Baltimore Harbor, Brewerton Channel	MD				89 90
CHBCR	Chesapeake Bay, Chester River	MD				89 90
CHBGI	Chesapeake Bay, Gibson Island	MD		85	86	87
CHBKI	Chesapeake Bay, Kent Island	MD				87
CHBSI	Chesapeake Bay, Smith Island	MD		85	86	
CHBYR	Chesapeake Bay, York River	VA	84	85	86	87
CHBER	Chesapeake Bay, Elizabeth River	VA			86	
PAMJB	Pamlico Sound, Jones Bay	NC	84	85	86	88 90
CHSSC	Charleston Harbor, South Channel	SC	84	85	86	87 89
SAVEI	Savannah River, Elba Island	SC				90
SAPHP	Sapelo Sound, High Point	GA	84	85	86	87 89
SAPBI	Sapelo Sound, Barbour Is. River	GA				87
SAPDH	Sapelo Sound, Dog Hammock	GA				87
SAPIN	Sapelo Sound, Inlet	GA				87
SAPSN	Sapelo Sound, South Newport River	GA				87

SITE CODE	SITE LOCATION	STATE	YEARS						
SIROP	St. Johns River, Orange Point	FL				87			
SJRTR	St. Johns River, Trout River	FL				87			
SJORR	St. Johns River, Ortega River	FL				87			
SJPMC	St. Johns River, W. Mill Cove	FL	84	85	86	87		89	
SJRPP	St. Johns River, Piney Point	FL				87			
BISNB	Biscayne Bay, North Bay	FL							90
LOTCH	Charlotte Harbor, Cape Haze	FL	84	85	86		88		
TAMTB	Tampa Bay, Northern Tampa Bay	FL	84	85				89	
APASC	Apalachicola Bay, St. George Island	FL	84	85	86		88		90
ANDMP	St. Andrew Bay, Military Point	FL						89	
COCCB	Choctawhatchee Bay, Choctawhatchee B.	FL						89	
COCDH	Choctawhatchee Bay, Destin Harbor	FL						89	
PENPB	Pensacola Bay, Pensacola Bay	FL		85	86	87		89	
MOBNP	Mobile Bay, North Point	AL	84	85	86		88		90
MOBMR	Mobile Bay, Mobile River	AL							90
PASPR	Pascagoula River, Pascagoula River	MS				87		89	
ROURI	Round Island, Round Island	MS	84	85		87			
HERHB	Heron Bay, Heron Bay	MS		85	86		88		
MRDSP	Mississippi River Delta, Southeast Pass	LA	84	85	86	87		89	90
MRDHP	Mississippi River Delta, Head of Passes	LA							90
BARBP	Barataria Bay, Barataria Pass	LA	84	85		87		89	
CALPL	Calcasieu River, Prien Lake	LA							90
CALWC	Calcasieu River, West Cove	LA							90
GALEB	Galveston Bay, East Bay	TX				87			
GALTC	Galveston Bay, Texas City	TX				87			
GALMP	Galveston Bay, Morgans Point	TX				87	88		

Table 3. National Benthic Surveillance Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION	STATE	YEARS						
GALEP	Galveston Bay, Eagle Point	TX	84	85	86	87	88	89	
GALTB	Galveston Bay, Trinity Bay	TX				87			
GALGB	Galveston Bay, Greens Bayou	TX					88	89	
GALGI	Galveston Bay, Goat Islands	TX					88		
GALCL	Galveston Bay, Clear Lake	TX					88		
LAVLB	Lavaca Bay, Lavaca Bay	TX					88		90
SAESB	San Antonio Bay, San Antonio Bay	TX	84	85	86			89	
CCBLR	Corpus Christi Bay, Long Reef	TX	84	85	86		88		90
CCBCC	Corpus Christi Bay, Corpus Christi Channel	TX							90
LLMLH	Lower Laguna Madre, Laguna Heights	TX	84	85	86		88		
SDBOU	San Diego Bay, Outside	CA	84	85					
MIBOU	Mission Bay, Outside	CA					88	89	90
SDBNC	San Diego Bay, National City	CA				87	88		
SDBTE	San Diego Bay, Twenty Eighth Street	CA	84	85	86	87	88	89	
SDBNO	San Diego Bay, North	CA			86	87	88	89	
SDBHI	San Diego Bay, Harbor Island	CA				87	88		
SDBSI	San Diego Bay, Shelter Island	CA				87	88	89	
OCEOU	Oceanside Harbor, Outside	CA							90
DANOU	Dana Point Harbor, Outside	CA	84	85	86	87	88	89	90
DANIH	Dana Point, Inside Harbor	CA				87			
SPBSB	San Pedro Bay, Seal Beach	CA	84						90
SPBLB	San Pedro Bay, Long Beach	CA	84	85	86	87		89	90
SPBOH	San Pedro Bay, Outer Harbor	CA	84	85	86	87		89	90
SPBCC	San Pedro Bay, Cerritos Channel	CA						89	90
SPBOU	San Pedro Bay, Outside	CA	84						
SMBMB	Santa Monica Bay, Manhattan Beach	CA	84	85			88		

SITE CODE	SITE LOCATION	STATE	YEARS						
SMBWE	Santa Monica Bay, West	CA		86		88	89	90	
SMBSE	Santa Monica Bay, Southeast	CA					89	90	
SMBSO	Santa Monica Bay, South	CA					89	90	
SMBNO	Santa Monica Bay, North	CA						90	
SMBDE	Santa Monica Bay, Deep	CA	84						
SLUOB	San Luis Obispo	CA				88			
ESTBY	Estero Bay	CA				88			
MONIH	Monterey Bay, Indian Head Beach	CA		85	86	87			90
MONML	Monterey Bay, Moss Landing	CA			86				
FARIS	Farallon Islands	CA				87			
SFBHP	San Francisco Bay, Hunters Point	CA	84	85	86	87	88	89	90
SFBRC	San Francisco Bay, Redwood City	CA				87	88		
SFBOA	San Francisco Bay, Oakland Entrance	CA	84						
SFBOE	San Francisco Bay, Oakland Estuary	CA	84			87	88	89	90
SFBSS	San Francisco Bay, Southampton Shoal	CA	84	85	86	87	88		90
SFBCC	San Francisco Bay, Castro Creek	CA				87	88		
SFBSP	San Francisco Bay, San Pablo Bay	CA	84	85	86	87	88		
SFBIC	San Francisco Bay, Islais Creek Channel	CA				87			
BODNO	Bodega Bay, North	CA	84	85	86	87	88	89	90
HUMII	Humboldt Bay, Indian Island	CA		85					
COONB	Coos Bay, North Bend	OR	84	85	86		88	89	90
COLYB	Columbia River, Youngs Bay	OR			86*				
COLDS	Columbia River, Desdemona Sands	WA	84	85	86		88		
PUGNR	Puget Sound, Nisqually Reach	WA	84	85	86				90
PUGCB	Puget Sound, Commencement Bay	WA	84	85	86			89	90
PUGEB	Puget Sound, Elliott Bay	WA	84	85	86			89	90

Table 3. National Benthic Surveillance Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION	STATE	YEARS		
BOCBP	Boca de Quadra, Bacrian Point	WA	86		
SKASR	Skagway, Skagway River	AK	86		
NAHES	Nahku Bay, East Side	AK	84		
LUTCR	Lutak Inlet, Chilkoot River Mouth	AK	84	86	
PWSPV	Prince William Sound, Port Valdez	AK	86		
GOAKB	Gulf of Alaska, Kamishak Bay	AK	86		
BERPM	Bering Sea, Port Moller	AK	86		88*
BERDH	Bering Sea, Dutch Harbor	AK	86		88*
BERKB	Bering Sea, Kvichak Bay	AK			88*
BERKR	Bering Sea, Kuskokwim River	AK			88*
BERYR	Bering Sea, Yukon River	AK			88*
NORNO	Norton Sound, Nome	AK			88*
CHKRD	Chukchi Sea, Red Dog Mine	AK		87	88*
BEAOP	Beaufort Sea, Olightok Point	AK	85	86	
BEAPB	Beaufort Sea, Prudhoe Bay	AK	85	86	

* indicates that samples were archived by the National Marine Fisheries Service.

Table 4. Mussel Watch Project Sites

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
PBPI	Penobscot Bay	Pickering Island	ME	44° 15.88'	68° 44.05'	ME	
PBSI	Penobscot Bay	Sears Island	ME	44° 27.13'	68° 53.38'	ME	
MSSP	Merriconeag Sound	Stover Point	ME	43° 45.48'	69° 59.72'	ME	
CAKP	Cape Arundel	Kennebunkport	ME	43° 20.87'	70° 28.48'	ME	KPCA
CACH	Cape Ann	Gap Head	MA	42° 39.65'	70° 35.71'	ME	CASI
				42° 40.04'	70° 36.30'	SED	
SHFP	Salem Harbor	Folger Point	MA	42° 31.13'	70° 52.02'	ME	
MBNB	Massachusetts Bay	Nahant Bay	MA	42° 25.23'	70° 54.41'	ME	
				42° 25.58'	70° 54.10'	SED	
BHDI	Boston Harbor	Deer Island	MA	42° 21.50'	70° 58.40'	ME	
BHDB	Boston Harbor	Dorchester Bay	MA	42° 18.25'	71° 02.30'	ME	
BHHB	Boston Harbor	Hingham Bay	MA	42° 16.45'	70° 53.26'	ME	
BHHI	Boston Harbor	Brewster Island	MA	42° 20.55'	70° 52.68'	ME	
MBNR	Massachusetts Bay	North River	MA	42° 09.65'	70° 44.41'	ME	
DBCI	Duxbury Bay	Clarks Island	MA	42° 00.88'	70° 38.17'	ME	
CCNH	Cape Cod	Nauset Harbor	MA	41° 47.68'	69° 56.90'	ME	
BBNI	Buzzards Bay	Naushon Island	MA	41° 30.77'	70° 44.49'	ME	
				41° 30.60'	70° 44.26'	SED	
BBWF	Buzzards Bay	West Falmouth	MA	41° 36.50'	70° 39.35'	ME	
				41° 36.77'	70° 40.37'	SED	
BBCC	Buzzards Bay	Cape Cod Canal	MA	41° 44.37'	70° 37.02'	ME	
BBAR	Buzzards Bay	Angelica Rock	MA	41° 34.63'	70° 51.78'	ME	
				41° 35.22'	70° 52.70'	SED	
BBRH	Buzzards Bay	Round Hill	MA	41° 32.45'	70° 55.52'	ME	

Table 4. Mussel Watch Project Sites

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
BBCN	Buzzards Bay	Goosebury Neck	MA	41° 28.68'	71° 02.13'	ME	
				41° 28.84'	71° 01.34'	SED	
NBMH	Narragansett Bay	Mount Hope Bay	RI	41° 40.60'	71° 35.57'	SED	
NBDI	Narragansett Bay	Dyer Island	RI	41° 36.20'	71° 17.37'	ME	
NBPI	Narragansett Bay	Patience Island	RI	41° 39.37'	71° 21.13'	ME	
NBDU	Narragansett Bay	Dutch Island	RI	41° 30.08'	71° 23.57'	ME	NBCI
BIBI	Block Island Sound	Block Island	RI	41° 11.40'	71° 35.14'	ME	
LICR	Long Island Sound	Connecticut River	CT	41° 15.83'	72° 20.50'	ME	
LINH	Long Island Sound	New Haven	CT	41° 15.40'	72° 56.67'	ME, CV	
LIHR	Long Island Sound	Housatonic River	CT	41° 10.07'	73° 06.58'	ME, CV	
LISI	Long Island Sound	Sheffield Island	CT	41° 03.40'	73° 24.77'	ME	
LIMR	Long Island Sound	Mamaroneck	NY	40° 56.47'	73° 42.03'	ME	
LITN	Long Island Sound	Throgs Neck	NY	40° 49.17'	73° 48.07'	ME	
LIHH	Long Island Sound	Hempstead Harbor	NY	40° 51.14'	73° 40.14'	ME	
LIHU	Long Island Sound	Huntington Harbor	NY	40° 55.00'	73° 25.87'	ME	
LIPJ	Long Island Sound	Port Jefferson	NY	40° 57.57'	73° 05.52'	ME, CV	
LIGB	Long Island	Gardiners Bay	NY	40° 59.90'	72° 06.68'	ME	
MBTH	Moriches Bay	Tuthill Point	NY	40° 46.65'	72° 45.37'	ME	MBTP
LIFI	Long Island	Fire Island Inlet	NY	40° 37.68'	73° 17.16'	ME	
Liji	Long Island	Jones Inlet	NY	40° 35.81'	73° 35.45'	ME	
HRJB	Hudson/Raritan Estuary	Jamaica Bay	NY	40° 34.13'	73° 53.88'	ME	
HRUB	Hudson/Raritan Estuary	Upper Bay	NY	40° 41.38'	74° 02.55'	ME	
HRLB	Hudson/Raritan Estuary	Lower Bay	NY	40° 33.97'	74° 03.13'	ME	
HRRB	Hudson/Raritan Estuary	Raritan Bay	NJ	40° 31.12	74° 11.05'	ME	
			NJ	40° 30.13	74° 09.71'	SED	

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
NYSH	New York Bight	Sandy Hook	NJ	40° 29.27'	74° 02.70'	ME	
NYLB	New York Bight	Long Branch	NJ	40° 17.68'	73° 58.56'	ME	
NYSR	New York Bight	Shark River	NJ	40° 11.18'	74° 00.38'	ME	
BIBL	Barnegat Inlet	Barnegat Light	NJ	39° 45.52'	74° 05.93'	ME	
AIAC	Abasco Inlet	Atlantic City	NJ	39° 22.15'	74° 24.48'	ME	
DBCM	Delaware Bay	Cape May	NJ	38° 58.92'	74° 57.92'	ME	
				38° 58.92'	74° 58.13'	SED	
DBFE	Delaware Bay	False Egg Island Point	NJ	39° 12.82'	75° 11.45'	CV	
				39° 12.71'	75° 11.45'	SED	
DBBD	Delaware Bay	Ben Davis Pt. Shoal	NJ	39° 15.93'	75° 16.93'	CV	
				39° 16.41'	75° 16.22'	SED	
DBAP	Delaware Bay	Arnolds Point Shoal	NJ	39° 23.09'	75° 25.88'	CV	
DBHC	Delaware Bay	Hope Creek	NJ	39° 25.60'	75° 29.60'	CV	
DBWB	Delaware Bay	Woodland Beach	DE	39° 19.92'	75° 27.42'	CV	
DBKI	Delaware Bay	Kelly Island	DE	39° 12.17'	75° 21.30'	CV	
DBCH	Delaware Bay	Cape Henlopen	DE	38° 47.28'	75° 07.42'	ME	
CBBO	Chesapeake Bay	Bodkin Point	MD	39° 09.60'	76° 24.07'	CV	
CBMP	Chesapeake Bay	Mountain Point Bar	MD	39° 04.42'	76° 24.73'	CV	MPBH
CBHP	Chesapeake Bay	Hackett Point Bar	MD	38° 58.37'	76° 25.00'	CV	
CBCP	Chesapeake Bay	Choptank River	MD	38° 36.41'	76° 07.20'	CV	
CBHG	Chesapeake Bay	Hog Point	MD	38° 18.74'	76° 23.87'	CV	CBCP
PRSP	Potomac River	Swan Point	MD	38° 16.90'	76° 56.02'	CV	
CBCI	Chincoteague Bay	Chincoteague Inlet	VA	37° 56.51'	75° 22.60'	CV	CBCC
QIUB	Quincy Inlet	Upshur Bay	VA	37° 31.85'	75° 43.38'	CV	
CBCC	Chesapeake Bay	Cape Charles	VA	37° 17.09'	76° 01.19'	CV	

Table 4. Mussel Watch Project Sites

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
PRMC	Potomac River	Mattox Creek	VA	38° 13.12'	76° 57.32'	CV	
PRRP	Potomac River	Ragged Point	VA	38° 09.37'	76° 35.87'	CV	
CBIB	Chesapeake Bay	Ingram Bay	VA	37° 47.63'	76° 17.06'	CV	CBSP
RRRR	Rappahannock River	Ross Rock	VA	37° 54.08'	76° 47.43'	CV	
CBDF	Chesapeake Bay	Dandy Point	VA	37° 06.10'	76° 19.41'	CV(86)	CBST, CBFH
				37° 06.04'	76° 17.73'	CV('87-'90)	
CBJR	Chesapeake Bay	James River	VA	37° 04.07'	76° 36.68'	CV	
RSJC	Roanoke Sound	John Creek	NC	35° 53.47'	75° 37.98'	CV	
PSWB	Pamlico Sound	Wysocking Bay	NC	35° 24.67'	76° 03.45'	CV	
PSPR	Pamlico Sound	Pungo River	NC	35° 19.48'	76° 26.95'	CV	
PSNR	Pamlico Sound	Neuse River	NC	35° 05.42'	76° 31.65'	CV	
PSCH	Pamlico Sound	Cape Hatteras	NC	35° 12.68'	75° 43.24'	CV	
				35° 12.37'	75° 42.96'	SED	
CFBI	Cape Fear	Battery Island	NC	33° 54.92'	78° 00.50'	CV	
BIPI	Beaufort Inlet	Pivers Island	NC	34° 43.10'	76° 40.53'	CV	
WBLB	Winyah Bay	Lower Bay	SC	33° 14.60'	79° 11.78'	CV	
SRNB	Santee River	North Bay	SC	33° 10.37'	79° 14.92'	CV	
CHFJ	Charleston Harbor	Fort Johnson	SC	32° 45.32'	79° 52.70'	CV	
CHSF	Charleston Harbor	Shutes Folly Island	SC	32° 46.83'	79° 55.00'	CV	
SRTI	Savannah River Estuary	Tybee Island	GA	32° 01.20'	80° 52.25'	CV	
SSSI	Sapelo Sound	Sapelo Island	GA	31° 23.20'	81° 17.33'	CV	
ARWI	Altamaha River	Wolfe Island	GA	31° 19.37'	81° 18.48'	CV	
				31° 19.62'	81° 19.50'	SED	
SJCB	St. Johns River	Chicopit Bay	FL	30° 22.62'	81° 26.63'	CV	SJGM
MRCB	Matanzas River	Crescent Beach	FL	29° 46.00'	81° 15.38'	CV	

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
IRSR	Indian River	Sebastian River	FL	27° 50.09'	80° 28.65'	CV	
				27° 51.06'	80° 28.70'	SED	
NMML	North Miami	Maule Lake	FL	25° 56.13'	80° 08.77'	CV	
BBGC	Biscayne Bay	Gould's Canal	FL	25° 31.39'	80° 18.85'	CV	
BBPC	Biscayne Bay	Princeton Canal	FL	25° 31.13'	80° 19.75'	CV	
EVFU	Everglades	Faka Union Bay	FL	25° 54.08'	81° 30.78'	CV	
RBHC	Rookery Bay	Henderson Creek	FL	26° 01.50'	81° 44.20'	CV	
NBNB	Naples Bay	Naples Bay	FL	26° 06.78'	81° 47.15'	CV	
CBFM	Charlotte Harbor	Fort Meyers	FL	26° 33.50'	81° 55.37'	CV	
CBBI	Charlotte Harbor	Bird Island	FL	26° 30.73'	82° 02.18'	CV	
TBCB	Tampa Bay	Cockroach Bay	FL	27° 40.55'	82° 30.56'	CV	
TBHB	Tampa Bay	Hillsborough Bay	FL	27° 51.28'	82° 23.75'	CV	
TBOT	Tampa Bay	Old Tampa Bay	FL	28° 01.48'	82° 37.95'	CV	
TBKA	Tampa Bay	Peter O. Knight Airport	FL	27° 54.46'	82° 27.29'	CV	
TBPB	Tampa Bay	Papys Bayou	FL	27° 50.53'	82° 36.62'	CV	
TBMK	Tampa Bay	Mullet Key Bayou	FL	27° 37.28'	82° 43.62'	CV	
TBNP	Tampa Bay	Navarez Park	FL	27° 47.28'	82° 45.28'	CV	
CKBP	Cedar Key	Black Point	FL	29° 12.32'	83° 04.25'	CV	
SRWP	Suwannee River	West Pass	FL	29° 19.75'	83° 10.45'	CV	
AESP	Apalachee Bay	Spring Creek	FL	30° 03.75'	84° 19.37'	CV	
APCP	Apalachicola Bay	Cat Point Bar	FL	29° 43.45'	84° 53.05'	CV	
APDB	Apalachicola Bay	Dry Bar	FL	29° 40.45'	85° 04.40'	CV	
SAWB	St. Andrew Bay	Watson Bayou	FL	30° 08.53'	85° 37.92'	CV	
PCMP	Panama City	Municipal Pier	FL	30° 09.00'	85° 39.80'	CV	

Table 4. Mussel Watch Project Sites

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
PCLO	Panama City	Little Oyster Bar	FL	30° 15.19'	85° 40.95'	CV	
				30° 14.27'	85° 42.69'	SED	
CBSR	Choctawhatchee Bay	Off Santa Rosa	FL	30° 24.35'	86° 12.75'	CV('86-'88)	
				30° 24.78'	86° 12.25'	CV('89-'90)	
CBPP	Choctawhatchee Bay	Postil Point	FL	30° 28.85'	86° 28.73'	CV	CBSP
CBJB	Choctawhatchee Bay	Joe's Bayou	FL	30° 24.62'	86° 29.45'	CV	
PBSP	Pensacola Bay	Sabine Point	FL	30° 20.80'	87° 09.10'	CV	
				30° 21.03'	87° 09.35'	SED	
PBIB	Pensacola Bay	Indian Bayou	FL	30° 31.35'	87° 06.38'	CV('86)	
				30° 31.00'	87° 06.70'	CV('87-'89)	
PBPH	Pensacola Bay	Public Harbor	FL	30° 24.63'	87° 11.42'	CV	
MBDR	Mobile Bay	Dog River	AL	30° 35.50'	88° 02.72'	CV	
MBHI	Mobile Bay	Hollingers Is. Chan.	AL	30° 33.80'	88° 04.50'	CV	
MBCP	Mobile Bay	Cedar Point Reef	AL	30° 18.70'	88° 08.00'	CV	
MSPB	Mississippi Sound	Pascagoula Bay	MS	30° 20.03'	88° 36.10'	CV	
MSBB	Mississippi Sound	Biloxi Bay	MS	30° 23.55'	88° 51.45'	CV	
MSPC	Mississippi Sound	Pass Christian	MS	30° 17.75'	89° 19.60'	CV('86)	
				30° 18.12'	89° 19.62'	CV('87-'90)	
MRFL	Mississippi River	Pass A Loutre	LA	29° 04.87'	89° 05.53'	CV	
M RTP	Mississippi River	Tiger Pass	LA	29° 08.69'	89° 25.67'	CV	
BSSI	Breton Sound	Sable Island	LA	29° 24.21'	89° 29.10'	CV	
BSBG	Breton Sound	Bay Gardene	LA	29° 35.90'	89° 37.25'	CV	
LBMP	Lake Borgne	Malheureux Point	LA	29° 52.02'	89° 40.70'	CV	
LBNO	Lake Borgne	New Orleans	LA	29° 56.60'	89° 50.10'	CV	
BBTB	Barataria Bay	Turtle Bay	LA	29° 30.67'	90° 05.00'	CV	

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
BBSD	Barataria Bay	Bayou Saint Denis	LA	29° 24.18'	89° 59.75'	CV	
BBMB	Barataria Bay	Middle Bank	LA	29° 16.55'	89° 56.53'	CV	
TBLF	Terrebonne Bay	Lake Felicity	LA	29° 15.80'	90° 24.40'	CV	
TBLB	Terrebonne Bay	Lake Barre	LA	29° 15.60'	90° 35.70'	CV	
CLCL	Caillou Lake	Caillou Lake	LA	29° 15.25'	90° 55.80'	CV	
ABOB	Atchafalaya Bay	Oyster Bayou	LA	29° 14.40'	91° 08.10'	CV	
ECSP	East Cote Blanche	South Point	LA	29° 28.50'	91° 48.00'	CV	
VBSP	Vermilion Bay	Southwest Pass	LA	29° 34.60'	92° 02.75'	CV	
JHJH	Joseph Harbor Bayou	Joseph Harbor Bayou	LA	29° 37.75'	92° 45.75'	CV	
CLSJ	Calcasieu Lake	St. Johns Island	LA	29° 49.83'	93° 23.00'	CV	
CLLC	Calcasieu Lake	Lake Charles	LA	30° 03.50'	93° 17.50'	CV('88,'89)	
				30° 03.42'	93° 18.42'	CV('90)	
SLBB	Sabine Lake	Blue Buck Point	LA	29° 47.50'	93° 54.42'	CV	
GBSC	Galveston Bay	Ship Channel	TX	29° 42.27'	94° 59.58'	CV	
GBYC	Galveston Bay	Yacht Club	TX	29° 37.30'	94° 59.50'	CV	
GBTD	Galveston Bay	Todd's Dump	TX	29° 30.06'	94° 53.82'	CV	
GBHR	Galveston Bay	Hanna Reef	TX	29° 28.85'	94° 44.00'	CV	
GBOB	Galveston Bay	Offatts Bayou	TX	29° 16.65'	94° 50.87'	CV('88)	
				29° 17.08'	94° 50.15'	CV('89,'90)	
GBCR	Galveston Bay	Confederate Reef	TX	29° 15.75'	94° 54.88'	CV	
				29° 16.10'	94° 54.60'	SED	
BRFS	Brazos River	Freeport Surfside	TX	28° 55.25'	95° 20.33'	CV	
BRCL	Brazos River	Cedar Lakes	TX	28° 51.50'	95° 27.83'	CV	
MBEM	Matagorda Bay	East Matagorda	TX	28° 42.67'	95° 53.00'	CV	
MBDI	Matagorda Bay	Dog Island	TX	28° 38.28'	96° 00.15'	CV	

Table 4. Mussel Watch Project Sites

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
MBTP	Matagorda Bay	Tres Palacios Bay	TX	28° 39.50'	96° 13.45'	CV	
MBCB	Matagorda Bay	Carancahua Bay	TX	28° 39.40'	96° 23.18'	CV	
MBLR	Matagorda Bay	Lavaca River Mouth	TX	28° 41.00'	96° 34.65'	CV('86-'88)	
				28° 39.80'	96° 34.83'	CV('89,'90)	
MBGP	Matagorda Bay	Gallinipper Point	TX	28° 35.25'	96° 34.17'	CV	
ESBD	Espiritu Santo	Bill Days Reef	TX	28° 24.85'	96° 26.27'	CV	
ESSP	Espiritu Santo	South Pass Reef	TX	28° 17.90'	96° 37.33'	CV	
SAMP	San Antonio Bay	Mosquito Point	TX	28° 20.65'	96° 42.78'	CV	
SAPP	San Antonio Bay	Panther Point Reef	TX	28° 14.00'	96° 42.55'	CV	
MBAR	Mesquite Bay	Ayres Reef	TX	28° 10.15'	96° 49.95'	CV	
ABLR	Aransas Bay	Long Reef	TX	28° 03.88'	96° 57.80'	CV('86-'89)	
				28° 02.96'	96° 56.77'	CV('90)	
CBCR	Copano Bay	Copano Reef	TX	28° 08.47'	97° 07.67'	CV	
ABHI	Aransas Bay	Harbor Island	TX	27° 50.33'	97° 04.52'	CV	
CCIC	Corpus Christi	Ingleside Cove	TX	27° 50.28'	97° 14.28'	CV	
CCNB	Corpus Christi	Nueces Bay	TX	27° 51.17'	97° 21.55'	CV	
CCBH	Corpus Christi	Boat Harbor	TX	27° 50.17'	97° 22.72'	CV	
LMAC	Lower Laguna Madre	Arroyo Colorado	TX	26° 16.80'	97° 17.30'	CV	
LMPI	Lower Laguna Madre	Port Isabel	TX	26° 04.62'	97° 12.05'	CV	
LMSB	Lower Laguna Madre	South Bay	TX	26° 02.77'	97° 10.48'	CV	
IBNJ	Imperial Beach	North Jetty	CA	32° 35.25'	117° 07.95'	MC	IBIB, SDIB
SDCB	San Diego Bay	Coronado Bridge	CA	32° 41.21'	117° 09.53'	ME	
SDHI	San Diego Bay	Harbor Island	CA	32° 43.49'	117° 11.68'	ME	
				32° 43.14'	117° 11.56'	SED	

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
PLLH	Point Loma	Lighthouse	CA	32° 40.90'	117° 14.92'	MC	PTLL
				32° 37.00'	117° 15.70'	SED	
MBVB	Mission Bay	Ventura Bridge	CA	32° 46.07'	117° 14.47'	ME	MBNJ
LJLJ	La Jolla	Point La Jolla	CA	32° 51.05'	117° 16.15'	MC	PTLJ
				32° 48.75'	117° 19.72'	SED	
OSBJ	Oceanside	Municipal Beach Jetty	CA	33° 12.11'	117° 23.56'	ME	
				33° 12.80'	117° 28.00'	SED	
SCBR	South Catalina Island	Bird Rock	CA	33° 27.10'	118° 29.20'	MC	SCTI
				33° 26.55'	118° 29.48'	SED	
NBWJ	Newport Beach	Wedge Jetty	CA	33° 35.48'	117° 52.77'	MC	NBBC
				33° 35.12'	117° 53.67'	SED	
ABWJ	Anaheim Bay	West Jetty	CA	33° 43.93'	118° 06.02'	MC	
				33° 44.27'	118° 07.81'	SED	
LBBW	Long Beach	Breakwater	CA	33° 43.42'	118° 10.45'	ME	
SPFP	San Pedro Harbor	Fishing Pier	CA	33° 42.42'	118° 16.43'	ME	CBRB
				33° 42.62'	118° 16.60'	SED	
PVRP	Palos Verdes	Royal Palms State Pk.	CA	33° 43.10'	118° 19.35'	MC	
				33° 42.65'	118° 21.00'	SED	
RBMJ	Redondo Beach	Municipal Jetty	CA	33° 49.91'	118° 23.50'	MC	
				33° 49.41'	118° 24.86'	SED	
MDSJ	Marina Del Rey	South Jetty	CA	33° 57.68'	118° 27.42'	ME	MDRJ
				33° 59.49'	118° 31.97'	SED	
TBSM	Las Tunas Beach	Santa Monica Bay	CA	34° 02.33'	118° 35.85'	MC	
				34° 01.60'	118° 33.73'	SED	

Table 4. Mussel Watch Project Sites

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
PDPD	Point Dume	Point Dume	CA	34° 00.08'	118° 48.48'	MC	PTDM
				33° 59.90'	118° 46.94'	SED	
SCFP	Santa Cruz Island	Fraser Point	CA	34° 03.59'	119° 55.25'	MC	SCRI
SANM	San Miguel Island	Tyler Bight	CA	34° 01.68'	120° 25.16'	MC	
SBSB	Point Santa Barbara	Point Santa Barbara	CA	34° 23.75'	119° 43.72'	MC	SBPT
				34° 23.15'	119° 43.22'	SED	
PCPC	Point Conception	Point Conception	CA	34° 26.70'	120° 27.20'	MC	PTCP
				34° 26.56'	120° 26.00'	SED	
SLSL	San Luis Obispo Bay	Point San Luis	CA	35° 09.64'	120° 45.26'	MC	SLOB
				35° 09.72'	120° 44.12'	SED	
SSSS	San Simeon Point	San Simeon Point	CA	35° 38.20'	121° 11.70'	MC	SSPT
PGLP	Pacific Grove	Lovers Point	CA	36° 37.55'	121° 54.91'	MC	
				36° 37.65'	121° 54.15'	SED	
MBML	Monterey Bay	Moss Landing	CA	36° 48.09'	121° 47.35'	MC	
MBSC	Monterey Bay	Point Santa Cruz	CA	36° 57.20'	122° 01.45'	MC	PTSC
FIEL	Farallon Islands	East Landing	CA	37° 41.77'	122° 59.99'	MC	
SFSM	San Francisco Bay	San Mateo Bridge	CA	37° 34.91'	122° 15.16'	ME	SPCP
				37° 35.30'	122° 13.53'	SED	
SFDB	San Francisco Bay	Dumbarton Bridge	CA	37° 30.33'	122° 07.17'	ME	MCRB
				37° 31.60'	122° 09.63'	SED	
SFEM	San Francisco Bay	Emeryville	CA	37° 49.25'	122° 19.70'	ME	SFYB
				37° 49.69'	122° 20.32'	SED	
SPSM	San Pablo Bay	Semple Point	CA	38° 04.20'	122° 14.33'	SED	SPSE
SPSP	San Pablo Bay	Point San Pedro	CA	38° 01.35'	122° 25.53'	SED	

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
TBSR	Tomales Bay	Spenger's Residence	CA	38° 08.95'	122° 54.17'	ME	TOMB
				38° 09.03'	122° 54.00'	SED	
BBBE	Bodega Bay	Bodega Bay Entrance	CA	38° 18.30'	123° 03.87'	MC	BBBH
				38° 18.50'	123° 02.84'	SED	
PALH	Point Arena	Lighthouse	CA	38° 57.18'	123° 44.30'	MC	PAPA, PTAR
PDEC	Point Delgada	Shelter Cove	CA	40° 02.31'	124° 04.76'	MC	SCLC
				40° 02.38'	124° 04.91'	SED	
HMBJ	Eureka	Humboldt Bay Jetty	CA	40° 46.13'	124° 14.25'	MC	HUBJ
				40° 45.06'	124° 12.83'	SED	
EUSB	Eureka	Samoa Bridge	CA	40° 49.32'	124° 10.09'	MC	
KRFR	Klamath River	Flint Rock Head	CA	41° 31.63'	124° 04.78'	MC	
SGSC	Crescent	Point St. George	CA	41° 44.88'	124° 12.52'	MC	PTSC
				41° 44.25'	124° 11.33'	SED	
CBCH	Coos Bay	Coos Head	OR	43° 21.03'	124° 19.85'	MC	CBCB
				43° 22.17'	124° 18.80'	SED	
CBRP	Coos Bay	Russell Point	OR	43° 26.00'	124° 13.15'	ME	
				43° 25.75'	124° 13.03'	SED	
YHYH	Yaquina Bay	Yaquina Head	OR	44° 40.58'	124° 04.68'	MC	
YHSS	Yaquina Bay	Sally's Slough	OR	44° 36.83'	124° 00.95'	SED	
YBOP	Yaquina Bay	Oneatta Point	OR	44° 34.98'	124° 00.05'	ME	NPYB
				44° 34.78'	124° 00.78'	SED	
THSP	Tillamook Bay	Hobsonville Point	OR	45° 32.67'	123° 54.36'	ME	
				45° 30.96'	123° 55.59'	SED	
CRSJ	Columbia River	South Jetty	OR	46° 14.00'	124° 02.78'	ME	CRFS
				46° 13.70'	124° 01.12'	MC	

Table 4. Mussel Watch Project Sites

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
CRYBs	Columbia River	Youngs Bay	OR	46° 11.00'	123° 52.75'	SED	
CRNJ	Columbia River	North Jetty	WA	46° 16.67'	124° 03.73'	ME	
				46° 16.15'	123° 59.92'	SED	
WBNA	Willapa Bay	Nahcotta	WA	46° 29.80'	124° 01.72'	ME	
				46° 30.48'	124° 00.36'	SED	
GHWJ	Gray's Harbor	Westport Jetty	WA	46° 54.75'	124° 07.05'	MC	
				46° 52.55'	124° 04.87'	SED	
JFCF	Strait of Juan de Fuca	Cape Flattery	WA	48° 23.30'	124° 43.28'	MC	
JFNBs	Strait of Juan de Fuca	Neah Bay	WA	48° 22.48'	124° 37.00'	SED	
PSPA	Puget Sound	Port Angeles	WA	48° 08.38'	123° 25.01'	ME	
				48° 08.28'	123° 25.10'	SED	
PSPT	Puget Sound	Port Townsend	WA	48° 06.32'	122° 46.63'	ME	
				48° 06.18'	122° 45.90'	SED	
PSHC	Puget Sound	Hood Canal	WA	47° 49.90'	122° 41.20'	ME	
				47° 50.32'	122° 38.90'	SED	
SSBI	South Puget Sound	Budd Inlet	WA	47° 05.94'	122° 53.60'	ME	
				47° 06.03'	122° 54.73'	SED	
CBTP	Commencement Bay	Tahlequah Point	WA	47° 20.15'	122° 30.10'	ME	CBBP
CBBPs	Commencement Bay	Browns Point	WA	47° 17.58'	122° 25.93'	SED	
PSSS	Puget Sound	South Seattle	WA	47° 31.73'	122° 23.92'	ME	
				47° 31.55'	122° 24.27'	SED	
EBDH	Elliott Bay	Duwamish Head	WA	47° 35.73'	122° 23.20'	ME	
				47° 34.55'	122° 25.08'	SED	
EBFR	Elliott Bay	Four-Mile Rock	WA	47° 36.35'	122° 24.74'	ME	
				47° 37.67'	122° 24.33'	SED	

SITE CODE	SITE NAME		STATE	LATITUDE(N)	LONGITUDE(W)	MATRIX	OTHER CODES USED
SIWP	Sinclair Inlet	Waterman Point	WA	47° 35.12'	122° 34.15'	ME	
				47° 33.05'	122° 37.62'	SED	
WIPP	Whidbey Island	Possession Point	WA	47° 54.15'	122° 22.80'	ME	
				47° 54.61'	122° 20.64'	SED	
PSEH	Puget Sound	Everett Harbor	WA	47° 58.42'	122° 13.72'	ME	
				47° 58.43'	122° 14.22'	SED	
BBSM	Bellingham Bay	Squalicum Marina Jet.	WA	48° 45.25'	122° 29.97'	ME	BBBM
				48° 44.77'	122° 30.72'	SED	
PRPR	Point Roberts	Point Roberts	WA	48° 59.30'	123° 05.30'	ME	
				48° 58.90'	123° 01.30'	ME	
				48° 56.47'	123° 00.36'	SED	
PVMC	Port Valdez	Mineral Creek Flats	AK	61° 08.17'	146° 27.75'	ME	
				61° 06.75'	146° 28.17'	SED	
UISB	Unakwit Inlet	Siwash Bay	AK	60° 57.62'	147° 38.67'	ME	
				60° 57.35'	147° 39.45'	SED	
KAUI	Kauai	Nawiliwili Harbor	HI	21° 57.40'	159° 21.35'	OS	
BPBP	Barber's Point	Barber's Point Harbor	HI	21° 19.50'	158° 07.45'	OS	BRPT
HHKL	Honolulu Hrb.	Keehi Lagoon	HI	21° 19.15'	157° 53.30'	OS	HOHA
				21° 18.15'	157° 53.30'	SED	

a sed - Sediment site location, ME - *Mytilus edulis*, MC - *Mytilus californianus*, CV - *Crassostrea virginica*, OS - *Ostrea sandvicensis*

s Sediment location of preceding site.

Table 5. Mussel Watch Project Bivalve Site Sampling Years

SITE CODE	SITE NAME		STATE	YEARS				
PBPI	Penobscot Bay	Pickering Island	ME	86	87	88	89	90
PBSI	Penobscot Bay	Sears Island	ME	86	87	88	89	90
MSSP	Merriconeag Sound	Stover Point	ME			88	89	90
CAKP	Cape Arundel	Kennebunkport	ME				89	90
CAGH	Cape Ann	Gap Head	MA		87	88	89	90
SHFP	Salem Harbor	Folger Point	MA			88	89	90
MBNB	Massachusetts Bay	Nahant bay	MA					90
BHDI	Boston Harbor	Deer Island	MA	86	87	88	89	90
BHDB	Boston Harbor	Dorchester Bay	MA	86	87	88	89	90
BHHB	Boston Harbor	Hingham Bay	MA	86	87	88	89	90
BHBI	Boston Harbor	Brewster Island	MA	86	87	88	89	90
MBNR	Massachusetts Bay	North River	MA					90
DBCI	Duxbury Bay	Clarks Island	MA				89	90
CCNH	Cape Cod	Nauset Harbor	MA				89	90
BBNI	Buzzards Bay	Naushon Island	MA					90
BBWF	Buzzards Bay	West Falmouth	MA					90
BBCC	Buzzards Bay	Cape Cod Canal	MA				89	90
BBAR	Buzzards Bay	Angelica Rock	MA	86	87	88	89	90
BBRH	Buzzards Bay	Round Hill	MA	86	87	88	89	90
BBGN	Buzzards Bay	Goosebury Neck	MA	86	87	88	89	90
NBDI	Narragansett Bay	Dyer Island	RI	86	87	88	89	90
NBPI	Narragansett Bay	Patience Island	RI				89	90
NBDU	Narragansett Bay	Dutch Island	RI	86	87		89	
BIBI	Block Island	Block Island	RI		87	88	89	90
LICR	Long Island Sound	Connecticut River	CT	86	87	88	89	90
LINH	Long Island Sound	New Haven	CT	86	87	88	89	90
LIHR	Long Island Sound	Housatonic River	CT	86	87	88	89	90

Table 5. Mussel Watch Project Bivalve Site Sampling Years

SITE CODE	SITE NAME		STATE	YEARS				
LISI	Long Island Sound	Sheffield Island	CT	86	87	88	89	90
LIMR	Long Island Sound	Mamaroneck	NY	86	87	88	89	90
LITN	Long Island Sound	Throgs Neck	NY	86	87	88	89	90
LIHH	Long Island Sound	Hempstead Harbor	NY	86	87	88	89	90
LIHU	Long Island Sound	Huntington Harbor	NY	86	87	88	89	90
LIPJ	Long Island Sound	Port Jefferson	NY	86	87	88	89	90
LIGB	Long Island	Gardiners Bay	NY				89	90
MBTH	Moriches Bay	Tuthill Point	NY	86	87	88	89	90
LIFI	Long Island	Fire Island Inlet	NY					90
LJIJ	Long Island	Jones Inlet	NY					90
HRJB	Hudson/Raritan Estuary	Jamaica Bay	NY	86	87	88	89	90
HRUB	Hudson/Raritan Estuary	Upper Bay	NY	86	87	88	89	90
HRLB	Hudson/Raritan Estuary	Lower Bay	NY	86	87	88	89	90
HRRB	Hudson/Raritan Estuary	Raritan Bay	NJ					90
NYSH	New York Bight	Sandy Hook	NJ	86	87	88	89	90
NYLB	New York Bight	Long Branch	NJ	86	87	88	89	90
NYSR	New York Bight	Shark River	NJ	86	87	88	89	90
BIBL	Barnegat Inlet	Barnegat Light	NJ			88	89	90
AIAC	Absecon Inlet	Atlantic City	NJ			88	89	90
DBCM	Delaware Bay	Cape May	NJ				89	90
DBFE	Delaware Bay	False Egg Island Point	NJ	86	87	88		90
DBBD	Delaware Bay	Ben Davis Point Shoal	NJ	86	87	88	89	90
DBAP	Delaware Bay	Arnolds Point Shoal	NJ	86	87	88		90
DBHC	Delaware Bay	Hope Creek	NJ				89	
DBWB	Delaware Bay	Woodland Beach	DE				89	
DBKI	Delaware Bay	Kelly Island	DE	86	87	88	89	90
DBCH	Delaware Bay	Cape Henlopen	DE				89	90

SITE CODE	SITE NAME		STATE	YEARS				
CBBO	Chesapeake Bay	Bodkin Point	MD				89	90
CBMP	Chesapeake Bay	Mountain Point Bar	MD	86	87	88	89	90
CBHP	Chesapeake Bay	Hackett Point Bar	MD	86	87	88	89	90
CBCP	Chesapeake Bay	Choptank River	MD				89	90
CBHG	Chesapeake Bay	Hog Point	MD	86	87	88	89	90
PRSP	Potomac River	Swan Point	MD				89	90
CBCI	Chincoteague Bay	Chincoteague Inlet	VA	86	87	88	89	90
QIUB	Quinby Inlet	Upshur Bay	VA	86	87	88	89	90
CBCC	Chesapeake Bay	Cape Charles	VA	86	87	88	89	90
PRMC	Potomac River	Mattox Creek	VA					90
PRRP	Potomac River	Ragged Point	VA				89	90
CBIB	Chesapeake Bay	Ingram Bay	VA	86	87			
RRRR	Rappahannock River	Ross Rock	VA				89	90
CBDP	Chesapeake Bay	Dandy Point	VA	86	87	88	89	90
CBJR	Chesapeake Bay	James River	VA				89	90
RSJC	Roanoke Sound	John Creek	NC	86	87	88	89	90
PSWB	Pamlico Sound	Wysocking Bay	NC	86	87	88	89	90
PSPR	Pamlico Sound	Pungo River	NC				89	90
PSNR	Pamlico Sound	Neuse River	NC				89	90
PSCH	Pamlico Sound	Cape Hatteras	NC					90
CFBI	Cape Fear	Battery Island	NC	86	87	88	89	90
BIPI	Beaufort Inlet	Pivers Island	NC					90
WBLB	Winyah Bay	Lower Bay	SC				89	90
SRNB	Santee River	North Bay	SC				89	90
CHFJ	Charleston Harbor	Fort Johnson	SC	86	87	88	89	90
CHSF	Charleston Harbor	Shutes Folly Island	SC	86	87	88	89	90
SRTI	Savannah River Estuary	Tybee Island	GA	86	87	88	89	90

Table 5. Mussel Watch Project Bivalve Site Sampling Years

SITE CODE	SITE NAME		STATE	YEARS				
SSSI	Sapelo Sound	Sapelo Island	GA	86	87	88	89	90
ARWI	Altamaha River	Wolfe Island	GA				89	90
SJCB	St. Johns River	Chicopit Bay	FL	86	87	88	89	90
MRCB	Matanzas River	Crescent Beach	FL	86	87	88	89	90
IRSR	Indian River	Sebastian River	FL			88	89	90
NMML	North Miami	Maule Lake	FL			88	89	90
BBGC	Biscayne Bay	Gould's Canal	FL					90
BBPC	Biscayne Bay	Princeton Canal	FL	86	87			
EVFU	Everglades	Faka Union Bay	FL	86	87	88	89	90
RBHC	Rookery Bay	Henderson Creek	FL	86	87	88	89	90
NBNB	Naples Bay	Naples Bay	FL	86	87	88	89	90
CBFM	Charlotte Harbor	Fort Meyers	FL			88	89	90
CBBI	Charlotte Harbor	Bird Island	FL	86	87	88	89	90
TBCB	Tampa Bay	Cockroach Bay	FL	86	87	88	89	90
TBHB	Tampa Bay	Hillsborough Bay	FL	86	87	88		
TBOT	Tampa Bay	Old Tampa Bay	FL			88	89	90
TBKA	Tampa Bay	Peter O. Knight Airport	FL				89	90
TBPB	Tampa Bay	Papys Bayou	FL	86	87	88	89	90
TBMK	Tampa Bay	Mullet Key Bayou	FL	86	87	88	89	90
TBNP	Tampa Bay	Navarez Park	FL				89	90
CKBP	Cedar Key	Black Point	FL	86	87	88	89	90
SRWP	Suwannee River	West Pass	FL			88		
AESP	Apalachee Bay	Spring Creek	FL				89	90
APCP	Apalachicola Bay	Cat Point Bar	FL	86	87	88	89	90
APDB	Apalachicola Bay	Dry Bar	FL	86	87	88	89	90
SAWB	St. Andrew Bay	Watson Bayou	FL	86	87	88	89	90
PCMP	Panama City	Municipal Pier	FL			88	89	90

SITE CODE	SITE NAME		STATE	YEARS					
PCLO	Panama City	Little Oyster Bar	FL				89	90	
CBSR	Choctawhatchee Bay	Off Santa Rosa	FL	86	87	88	89	90	
CBPP	Choctawhatchee Bay	Postil Point	FL	86	87	88	89	90	
CBJB	Choctawhatchee Bay	Joe's Bayou	FL				89	90	
PBSP	Pensacola Bay	Sabine Point	FL						90
PBIB	Pensacola Bay	Indian Bayou	FL	86	87	88	89		
PBPH	Pensacola Bay	Public Harbor	FL			88	89	90	
MBDR	Mobile Bay	Dog River	AL						90
MBHI	Mobile Bay	Hollingers Island Chan.	AL			88	89	90	
MBCP	Mobile Bay	Cedar Point Reef	AL	86	87	88	89	90	
MSPB	Mississippi Sound	Pascagoula Bay	MS	86	87	88	89	90	
MSBB	Mississippi Sound	Biloxi Bay	MS	86	87	88	89	90	
MSPC	Mississippi Sound	Pass Christian	MS	86	87	88	89	90	
MRPL	Mississippi River	Pass a Loutre	LA			88	89	90	
M RTP	Mississippi River	Tiger Pass	LA			88	89	90	
BSSI	Breton Sound	Sable Island	LA	86	87	88	89	90	
BSBG	Breton Sound	Bay Gardene	LA	86	87	88	89	90	
LBMP	Lake Borgne	Malheureux Point	LA	86	87	88	89	90	
LBNO	Lake Borgne	New Orleans	LA			88			
BBTB	Barataria Bay	Turtle Bay	LA			88			
BBSD	Barataria Bay	Bayou Saint Denis	LA	86	87	88	89	90	
BBMB	Barataria Bay	Middle Bank	LA	86	87	88	89	90	
TBLF	Terrebonne Bay	Lake Felicity	LA	86	87	88	89	90	
TBLB	Terrebonne Bay	Lake Barre	LA	86	87	88	89	90	
CLCL	Caillou Lake	Caillou Lake	LA	86	87	88	89	90	
ABOB	Atchafalaya Bay	Oyster Bayou	LA	86	87	88	89	90	
VBSP	Vermillion Bay	Southwest Pass	LA	86	87	88	89	90	

Table 5. Mussel Watch Project Bivalve Site Sampling Years

SITE CODE	SITE NAME		STATE	YEARS				
JHJH	Joseph Harbor Bayou	Joseph Harbor Bay	LA	86	87	88	89	90
CLSJ	Calcasieu Lake	St. Johns Island	LA	86	87	88	89	90
CLLC	Calcasieu Lake	Lake Charles	LA			88	89	90
SLBB	Sabine Lake	Blue Buck Point	TX	86	87	88	89	90
GBSC	Galveston Bay	Ship Channel	TX			88	89	90
GBYC	Galveston Bay	Yacht Club	TX	86	87	88	89	90
GBTD	Galveston Bay	Todd's Dump	TX	86	87	88	89	90
GBHR	Galveston Bay	Hanna Reef	TX	86	87	88	89	90
GBOB	Galveston Bay	Offatts Bayou	TX			88	89	90
GBCR	Galveston Bay	Confederate Reef	TX	86	87	88	89	90
BRFS	Brazos River	Freeport Surfside	TX			88	89	90
BRCL	Brazos River	Cedar Lakes	TX				89	90
MBEM	Matagorda Bay	East Matagorda	TX	86	87	88	89	90
MBDI	Matagorda Bay	Dog Island	TX			88		
MBTP	Matagorda Bay	Tres Palacios Bay	TX	86	87	88	89	90
MBCB	Matagorda Bay	Carancahua Bay	TX			88		90
MBLR	Matagorda Bay	Lavaca River Mouth	TX	86	87		89	90
MBGP	Matagorda Bay	Gallinipper Point	TX	86	87	88	89	
ESBD	Espiritu Santo	Bill Days Reef	TX			88	89	90
ESSP	Espiritu Santo	South Pass Reef	TX	86	87			90
SAMP	San Antonio Bay	Mosquito Point	TX	86	87			
SAPP	San Antonio Bay	Panther Point Reef	TX	86	87			90
MBAR	Mesquite Bay	Ayres Reef	TX	86	87	88	89	90
ABLR	Aransas Bay	Long Reef	TX	86	87	88	89	90
CBCR	Copano Bay	Copano Reef	TX	86	87	88	89	90
ABHI	Aransas Bay	Harbor Island	TX			88		
CCIC	Corpus Christi	Ingleside Cove	TX	86		88	89	90

SITE CODE	SITE NAME		STATE	YEARS				
CCNB	Corpus Christi	Nueces Bay	TX	86	87	88	89	90
CCBH	Corpus Christi	Boat Harbor	TX			88		90
LMAC	Lower Laguna Madre	Arroyo Colorado	TX					90
LMPI	Laguna Madre	Port Isabel	TX			88		
LMSB	Lower Laguna Madre	South Bay	TX	86	87	88	89	90
KAUI	Kauai	Nawiliwili Harbor	HI			88		
BPBP	Barber's Point	Barber's Pt. Boat Basin	HI	86	87	88		90
HHKL	Honolulu Harbor	Keehi Lagoon	HI	86	87	88		90
IBNJ	Imperial Beach	North Jetty	CA	86	87	88	89	90
SDCB	San Diego Bay	Coronado Bridge	CA				89	90
SDHI	San Diego Bay	Harbor Island	CA	86	87	88	89	90
PLLH	Point Loma	Lighthouse	CA	86	87	88	89	90
MBVB	Mission Bay	Ventura Bridge	CA	86	87	88	89	90
LJLJ	La Jolla	Point La Jolla	CA	86	87	88	89	90
OSBJ	Oceanside	Municipal Beach Jetty	CA	86	87	88	89	90
SCBR	South Catalina Island	Bird Rock	CA	86	87	88		90
NBWJ	Newport Beach	Wedge Jetty	CA	86	87	88	89	90
ABWJ	Anaheim Bay	West Jetty	CA	86	87	88	89	90
LBBW	Long Beach	Breakwater	CA					90
SPFP	San Pedro Harbor	Fishing Peir	CA	86	87	88	89	90
PVRP	Palos Verdes	Royal Palms State Park	CA	86	87	88	89	90
RBMJ	Redondo Beach	Municipal Jetty	CA					90
MDSJ	Marina Del Rey	South Jetty	CA	86	87	88	89	90
TBSM	Santa Monica Bay	Las Tunas Beach	CA					90
PDPD	Point Dume	Point Dume	CA	86	87	88	89	90
SCFP	Santa Cruz Island	Fraser Point	CA	86	87	88		90
SANM	San Miguel Island	Tyler Bight	CA			88		

Table 5. Mussel Watch Project Bivalve Site Sampling Years

SITE CODE	SITE NAME		STATE	YEARS				
SBSB	Point Santa Barbara	Point Santa Barbara	CA	86	87	88	89	90
PCPC	Point Conception	Point Conception	CA	86	87	88	89	90
SLSL	San Luis Obispo Bay	Point San Luis	CA	86	87	88	89	90
SSSS	San Simeon Point	San Simeon Point	CA	86	87	88	89	90
PGLP	Pacific Grove	Lovers Point	CA	86	87	88	89	90
MBML	Monterey Bay	Moss Landing	CA					90
MBSC	Monterey Bay	Point Santa Cruz	CA	86	87	88	89	90
PIEL	Farallon Islands	East Landing	CA			88		
SFSM	San Francisco Bay	San Mateo Bridge	CA	86	87	88	89	90
SFDB	San Francisco Bay	Dumbarton Bridge	CA	86	87	88	89	90
SFEM	San Francisco Bay	Emeryville	CA		87	88	89	90
TBSR	Tornales Bay	Spenger's Residence	CA	86	87	88	89	90
BBBE	Bodega Bay	Bodega Bay Entrance	CA	86	87	88	89	90
PALH	Point Arena	Lighthouse	CA	86	87	88	89	90
PDSC	Point Delgada	Shelter Cove	CA	86	87	88	89	90
HMBJ	Eureka	Humboldt Bay Jetty	CA	86	87	88	89	90
EUSB	Eureka	Samoa Bridge	CA					90
KRFR	Klamath River	Flint Rock Head	CA				89	
SGSG	Crescent City	Point St. George	OR	86	87	88	89	90
CBCH	Coos Bay	Coos Head	OR	86	87	88	89	90
CBRP	Coos Bay	Russell Point	OR	86	87	88	89	90
YHYH	Yaquina Head	Yaquina Head	OR	86	87	88	89	90
YBOP	Yaquina Bay	Oneatta Point	OR	86	87	88	89	90
TBHP	Tillamook Bay	Hobsonville Point	OR	86	87	88	89	90
CRSJ	Columbia River	South Jetty	OR	86	87	88	89	90
CRNJ	Columbia River	North Jetty	WA				89	90
WBNA	Willapa Bay	Nahcotta	WA					90

SITE CODE	SITE NAME		STATE	YEARS					
GHWJ	Gray's Harbor	Westport Jetty	WA	86	87	88	89	90	
JFCF	Strait of Juan de Fuca	Cape Flattery	WA	86	87	88		90	
PSPA	Puget Sound	Port Angeles	WA				89	90	
PSPT	Puget Sound	Port Townsend	WA					90	
PSHC	Puget Sound	Hood Canal	WA				89	90	
SSBI	South Puget Sound	Budd Inlet	WA	86	87	88	89	90	
CBTP	Commencement Bay	Tahlequah Point	WA	86	87	88	89	90	
PSSS	Puget Sound	South Seattle	WA				89	90	
EBDH	Elliott Bay	Duwamish Head	WA					90	
EBFR	Elliott Bay	Four-Mile Rock	WA	86	87	88	89	90	
SIWP	Sinclair Inlet	Waterman Point	WA	86	87	88	89	90	
WIPP	Whidbey Island	Possession Point	WA	86	87	88	89	90	
PSEH	Puget Sound	Everett Harbor	WA				89	90	
BBSM	Bellingham Bay	Squalicum Marina Jetty	WA	86	87	88	89	90	
PRPR	Point Roberts	Point Roberts	WA	86	87	88	89	90	
PVMC	Port Valdez	Mineral Creek Flats	AK	86	87	88		90	
UISB	Unakwitt Inlet	Siwash Bay	AK	86	87	88		90	

Table 6. Mussel Watch Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION	STATE	YEARS
PBPI	Penobscot Bay	Pickering Island	ME 87
PBSI	Penobscot Bay	Sears Island	ME 86 87
MSSP	Merriconeag Sound	Stover Point	ME 88
CAGH	Cape Ann	Gap Head	MA 87
SHFP	Salem Harbor	Folger Point	MA 88
MBNB	Massachusetts Bay	Nahant Bay	MA 90
BHDI	Boston Harbor	Deer Island	MA 86 87
BHDB	Boston Harbor	Dorchester Bay	MA 86 87
BHHB	Boston Harbor	Hingham Bay	MA 86 87
MBNR	Massachusetts Bay	North River	MA 90
DBCI	Duxbury Bay	Clarks Island	MA 89 90
CCNH	Cape Cod	Nauset Harbor	MA 89
BBNI	Buzzards Bay	Naushon Island	MA 90
BBWF	Buzzards Bay	West Falmouth	MA 90
BBCC	Buzzards Bay	Cape Cod Canal	MA 89
BBAR	Buzzards Bay	Angelica Rock	MA 86 87
BBRH	Buzzards Bay	Round Hill	MA 86 87
BBGN	Buzzards Bay	Goosebury Neck	MA 86 87
NBMH	Narragansett Bay	Mount Hope Bay	RI 86
NBDI	Narragansett Bay	Dyer Island	RI 86 87
NBPI	Narragansett Bay	Patience Island	RI 89
NBDU	Narragansett Bay	Dutch Island	RI 86 87
BIBI	Block Island	Block Island	RI 87
LICR	Long Island Sound	Connecticut River	CT 86 87
LINH	Long Island Sound	New Haven	CT 86 90
LIHR	Long Island Sound	Housatonic River	CT 86 90
LISI	Long Island Sound	Sheffield Island	CT 86 87
LIMR	Long Island Sound	Mamaroneck	NY 86 87

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Table 6. Mussel Watch Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION	STATE	YEARS			
LITN	Long Island Sound	Throgs Neck	NY	86	87	89
LIHH	Long Island Sound	Hempstead Harbor	NY	86	87	
LIHU	Long Island Sound	Huntington Harbor	NY	86	87	
LIPJ	Long Island Sound	Port Jefferson	NY	86		90
LIGB	Long Island	Gardiners Bay	NY			89
MBTH	Moriches Bay	Tuthill Point	NY	86	87	
LIJI	Long Island	Jones Inlet	NY			90
HRJB	Hudson/Raritan Estuary	Jamaica Bay	NY	86		
HRUB	Hudson/Raritan Estuary	Upper Bay	NY	86	87	89
HRLB	Hudson Raritan Estuary	Lower Bay	NY	86	87	89
HRRB	Hudson/Raritan Estuary	Raritan Bay	NJ	86		
NYSH	New York Bight	Sandy Hook	NJ	86	87	
DBCM	Delaware Bay	Cape May	NJ			89
DBFE	Delaware Bay	False Egg Island Point	NJ		87	
DBBD	Delaware Bay	Ben Davis Point Shoal	NJ		87	
DBAP	Delaware Bay	Arnolds Point Shoal	NJ	86	87	
DBHC	Delaware Bay	Hope Creek	NJ			89
DBWB	Delaware Bay	Woodland Beach	DE			89
DBKI	Delaware Bay	Kelly Island	DE	86	87	
DBCH	Delaware Bay	Cape Henlopen	DE			89
CBBO	Chesapeake Bay	Bodkin Point	MD			89
CBMP	Chesapeake Bay	Mountain Point Bar	MD	86	87	
CBHP	Chesapeake Bay	Hackett Point Bar	MD	86	87	
CBCP	Chesapeake Bay	Choptank River	MD			89
CBHG	Chesapeake Bay	Hog Point	MD	86		
PRSP	Potomac River	Swan Point	MD			89
CBCI	Chincoteague Bay	Chincoteague Inlet	VA	86		
QIUB	Quinby Inlet	Upshur Bay	VA	86	87	

SITE CODE	SITE LOCATION		STATE	YEARS		
CBCC	Chesapeake Bay	Cape Charles	VA	86	87	
PRMC	Potomac River	Mattox Creek	VA			90
PRRP	Potomac River	Ragged Point	VA			89
CBIB	Chesapeake Bay	Ingram Bay	VA	86	87	
RRRR	Rappahannock River	Ross Rock	VA			89
CBDP	Chesapeake Bay	Dandy Point	VA	86	87	
CBJR	Chesapeake Bay	James River	VA			89
RSJC	Roanoke Sound	John Creek	VA	86		
PSWB	Pamlico Sound	Wysocking Bay	NC	86		
PSPR	Pamlico Sound	Pungo River	NC			89
PSNR	Pamlico Sound	Neuse River	NC			89
PSCH	Pamlico Sound	Cape Hatteras	NC			90
CFBI	Cape Fear	Battery Island	NC	86	87	
BIPI	Beaufort Inlet	Pivers Island	NC			90
SRNB	Santee River	North Bay	SC			89 90
CHFJ	Charleston Harbor	Fort Johnson	SC		87	90
CHSF	Charleston Harbor	Shutes Folly Island	SC	86	87	90
SRTI	Savannah R. Estuary	Tybee Island	GA	86	87	90
SSSI	Sapelo Sound	Sapelo Island	GA	86		
ARWI	Altamaha River	Wolfe Island	GA			89 90
SJCB	St. Johns River	Chicopit Bay	FL	86	87	
MRCB	Matanzas River	Crescent Beach	FL	86		
IRSR	Indian River	Sebastian River	FL			88
NMML	North Miami	Maule Lake	FL			88
BBCC	Biscayne Bay	Gould's Canal	FL			90
BBPC	Biscayne Bay	Princeton Canal	FL	86	87	
EVFU	Everglades	Faka Union Bay	FL	86	87	
RBHC	Rookery Bay	Henderson Creek	FL	86	87	

Table 6. Mussel Watch Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION		STATE	YEARS		
NBNB	Naples Bay	Naples Bay	FL	86	87	
CBFM	Charlotte Harbor	Fort Meyers	FL			88
CBBI	Charlotte Harbor	Bird Island	FL	86	87	
TBCB	Tampa Bay	Cockroach Bay	FL	86	87	
TBHB	Tampa Bay	Hillsborough Bay	FL	86	87	
TBOT	Tampa Bay	Old Tampa Bay	FL			88
TBKA	Tampa Bay	Peter O. Knight Airport	FL			89
TBPB	Tampa Bay	Papys Bayou	FL	86	87	
TBMK	Tampa Bay	Mullet Key Bayou	FL	86	87	
TBNP	Tampa Bay	Navarez Park	FL			89
CKBP	Cedar Key	Black Point	FL	86	87	
SRWP	Suwannee River	West Pass	FL			88
AESP	Apalachee Bay	Spring Creek	FL			89
APCP	Apalachicola Bay	Cat Point Bar	FL	86	87	
APDB	Apalachicola Bay	Dry Bar	FL	86	87	
SAWB	St. Andrew Bay	Watson Bayou	FL	86	87	90
PCMP	Panama City	Municipal Pier	FL			88 90
PCLO	Panama City	Little Oyster Bar	FL			89 90
CBSR	Choctawhatchee Bay	Off Santa Rosa	FL	86	87	90
CBPP	Choctawhatchee Bay	Postil Point	FL	86	87	90
CBJB	Choctawhatchee Bay	Joe's Bayou	FL			90
PBSP	Pensacola Bay	Sabine Point	FL			90
PBIB	Pensacola Bay	Indian Bayou	FL	86	87	
MBDR	Mobile Bay	Dog River	AL			90
MBHI	Mobile Bay	Hollingers Island Chan.	AL			88
MBCP	Mobile Bay	Cedar Point Reef	AL	86	87	
MSPB	Mississippi Sound	Pascagoula Bay	MS	86	87	
MSBB	Mississippi Sound	Biloxi Bay	MS	86	87	

SITE CODE	SITE LOCATION		STATE	YEARS		
MSPC	Mississippi Sound	Pass Christian	MS	86	87	
MRPL	Mississippi River	Pass a Loutre	LA			88
M RTP	Mississippi River	Tiger Pass	LA			88
BSSI	Breton Sound	Sable Island	LA	86	87	
BSBG	Breton Sound	Bay Gardene	LA	86	87	
LBMP	Lake Borgne	Malheureux Point	LA	86	87	
LBNO	Lake Borgne	New Orleans	LA			88
BBTB	Barataria Bay	Turtle Bay	LA			88
BBSD	Barataria Bay	Bayou Saint Denis	LA	86	87	
BBMB	Barataria Bay	Middle Bank	LA	86	87	
TBLF	Terrebonne Bay	Lake Felicity	LA	86	87	
TBLB	Terrebonne Bay	Lake Barre	LA	86	87	
CLCL	Caillou Lake	Caillou Lake	LA	86	87	
ABOB	Atchafalaya Bay	Oyster Bayou	LA	86	87	
ECSP	East Cote Blanche	South Point	LA	86		
VBSP	Vermillion Bay	Southwest Pass	LA	86	87	
JHJH	Joseph Harbor Bayou	Joseph Harbor Bay	LA	86	87	
CLSJ	Calcasieu Lake	St. Johns Island	LA	86	87	
CLLC	Calcasieu Lake	Lake Charles	LA			88
SLBB	Sabine Lake	Blue Buck Point	TX	86	87	
GBSC	Galveston Bay	Ship Channel	TX			88 90
GBYC	Galveston Bay	Yacht Club	TX	86	87	90
GBTD	Galveston Bay	Todd's Dump	TX	86	87	
GBHR	Galveston Bay	Hanna Reef	TX	86	87	
GBOB	Galveston Bay	Offatts Bayou	TX			88
GBCR	Galveston Bay	Confederate Reef	TX	86	87	
BRFS	Brazos River	Freeport Surfside	TX			88
BRCL	Brazos River	Cedar Lakes	TX			89

Table 6. Mussel Watch Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION	STATE	YEARS
MBEM	Matagorda Bay	TX	86 87
MBDI	Matagorda Bay	TX	88
MBTP	Matagorda Bay	TX	86 87
MBCB	Matagorda Bay	TX	88
MBLR	Matagorda Bay	TX	86 87
MBGP	Matagorda Bay	TX	86 87
ESBD	Espiritu Santo	TX	86 87 88
ESSP	Espiritu Santo	TX	86 87
SAMP	San Antonio Bay	TX	86 87
SAPP	San Antonio Bay	TX	86 87
MBAR	Mesquite Bay	TX	86 87
ABLR	Aransas Bay	TX	86 87
CBCR	Copano Bay	TX	86 87
ABHI	Aransas Bay	TX	88
CCIC	Corpus Christi	TX	86 87
CCNB	Corpus Christi	TX	86 87
CCBH	Corpus Christi	TX	88
LMPI	Lower Laguna Madre	TX	88
LMSB	Lower Laguna Madre	TX	86 87
BPBP	Barber's Point	HI	86 87
HHKL	Honolulu Harbor	HI	86 87
IBNJ	Imperial Beach	CA	86
SDCB	San Diego Bay	CA	89
SDHI	San Diego Bay	CA	86 87
PLLH	Pt. Loma	CA	86 87
MBVB	Mission Bay	CA	86
LJLJ	La Jolla	CA	87
OSBJ	Oceanside	CA	86 87

SITE CODE	SITE LOCATION		STATE	YEARS	
NBWJ	Newport Beach	Wedge Jetty	CA	86	87
ABWJ	Anaheim Bay	West Jetty	CA	86	87
LBBW	Long Beach	Breakwater	CA		90
SPFP	San Pedro Harbor	Fishing Peir	CA	86	87
PVRP	Palos Verdes	Royal Palms State Park	CA	86	87
RBMJ	Redondo Beach	Municipal Jetty	CA		90
MDSJ	Marina Del Rey	South Jetty	CA	86	87
TBSM	Las Tunas Beach	Santa Monica Bay	CA		90
PDPD	Point Dume	Point Dume	CA	86	87
SBSB	Point Santa Barbara	Point Santa Barbara	CA	86	87
PCPC	Point Conception	Point Conception	CA	86	
SLSL	San Luis Obispo Bay	Point San Luis	CA	86	
SSSS	San Simeon Point	San Simeon Point	CA	86	87
PGLP	Pacific Grove	Lovers Point	CA	86	
MBSC	Monterey Bay	Point Santa Cruz	CA	86	
SFSM	San Francisco Bay	San Mateo Bridge	CA	86	87
SFDB	San Francisco Bay	Dumbarton Bridge	CA	86	87
SFEM	San Francisco Bay	Emeryville	CA	86	87
SPSM	San Pablo Bay	Semple Point	CA	86	87
SPSP	San Pablo Bay	Point San Pedro	CA	86	87
TBSR	Tomales Bay	Spenger's Residence	CA	86	87
BBBE	Bodega Bay	Bodega Bay Entrance	CA	86	
HMBJ	Eureka	Humboldt Bay Jetty	CA	86	
EUSB	Eureka	Samoa Bridge	CA		90
CBCH	Coos Bay	Coos Head	OR	86	87
CBRP	Coos Bay	Russell Point	OR	86	87
YHSS	Yaquina Head	Sally's Slough	OR	86	87
YBOP	Yaquina Bay	Oneatta Point	OR	86	87

Table 6. Mussel Watch Project Sediment Site Sampling Years

SITE CODE	SITE LOCATION		STATE	YEARS		
TBHP	Tillamook Bay	Hobsonville Point	OR	86	87	
CRYB	Columbia River	Youngs Bay	OR	86	87	
CRNJ	Columbia River	North Jetty	WA			89
WBNA	Willapa Bay	Nahcotta	WA			90
GHWJ	Gray's Harbor	Westport Jetty	WA	86		90
JFNB	Strait of Juan de Fuca	Neah Bay	WA	86	87	88
PSPA	Puget Sound	Port Angeles	WA			89
PSPT	Puget Sound	Port Townsend	WA			90
PSHC	Puget Sound	Hood Canal	WA			89
SSBI	South Puget Sound	Budd Inlet	WA	86	87	
CBBP	Commencement Bay	Browns Point	WA	86	87	
PSSS	Puget Sound	South Seattle	WA			89
EBDH	Elliott Bay	Duwamish Head	WA			90
EBFR	Elliott Bay	Four-Mile Rock	WA	86		90
SIWP	Sinclair Inlet	Waterman Point	WA	86	87	
WIPP	Whidbey Island	Possession Point	WA	86	87	
PSEH	Puget Sound	Everett Harbor	WA			89
BBSM	Bellingham Bay	Squalicum Marina Jetty	WA	86	87	
PRPR	Point Roberts	Point Roberts	WA	86	87	
PVMC	Port Valdez	Mineral Creek Flats	AK	86	87	
UISB	Unakwit Inlet	Siwash Bay	AK	86	87	

Table 7. Comparison of NS&T Program's MW Project Sites to Former EPA'S MW Program Sites

NS&T Site Code	NS&T Site Name		State	EPA Site Code	EPA Site Name	Distance (kilometers)
PBPI	Penobscot Bay	Pickering Island	ME	BHF	Blue Hills Falls	18
PBSI	Penobscot Bay	Sears Island	ME	SI	Sears Island	2
MSSP	Merriconeag Snd.	Stover Point	ME	CN	Cape Newagen	27
MSSP	Merriconeag Snd.	Stover Point	ME	BI	Bailey Island	1
MSSP	Merriconeag Snd.	Stover Point	ME	POR	Portland	20
CAGH	Cape Ann	Gap Head	MA	CA	Cape Ann	2
BHDI	Boston Harbor	Deer Island	MA	BOS(B)	Boston	1
DBCI	Duxbury Bay	Clarks Island	MA	PLY	Plymouth	8
BBCC	Buzzards Bay	Cape Cod Canal	MA	CCC	Cape Cod Canal	0
BBAR	Buzzards Bay	Angelica Rock	MA	NB	New Bedford	7
BBGN	Buzzards Bay	Goosebury Neck	MA	GAY	Gay Head	18
BBGN	Buzzards Bay	Goosebury Neck	MA	SK	Sakonnet Point	13
NBDU	Narragansett Bay	Dutch Island	RI	NRI(7609)	Narragansett	3-16*
NBDI	Narragansett Bay	Dyer Island	RI	NRI(790824)	Narragansett	7-17*
BIBI	Block Island Sound	Block Island	RI	BLK	Block Island	1
LIGB	Long Island	Gardiners Bay	NY	GCI	Great Gull Island	23
LIGB	Long Island	Gardiners Bay	NY	MIL	Millstone, CT	34
LIHR	Long Island Sound	Housatonic River	CT	NH	New Haven(Housatonic)	5
LIHR	Long Island Sound	Housatonic River	CT	HP	Herod Point, Long Island Snd., NY	31
LIHH	Long Island Sound	Hempstead Harbor	NY	MN	Manhasset Neck	5
HRJB	Hudson/Rar. Est.	Jamaica Bay	NY	RK	Rockway Point	5
MBTH	Moriches Bay	Tuthill Point	NY	FI	Fire Island	1
AIAC	Absecon Inlet	Atlantic City	NJ	AC	Atlantic City	0
DBCM	Delaware Bay	Cape May	NJ	MAY	Cape May	6
DBCH	Delaware Bay	Cape Henlopen	DE	CH	Cape Henlopen	1
QIUB	Quinby Inlet	Upshur Bay	VA	AS(A)	Assateague Island, MD	102
QIUB	Quinby Inlet	Upshur Bay	VA	WMU	Wachapreague	11
QIUB	Quinby Inlet	Upshur Bay	VA	WOY	Wachapreague	10

Table 7. Comparison of NS&T Program's MW Project Sites to Former EPA'S MW Program Sites

NS&T Site Code	NS&T Site Name		State	EPA Site Code	EPA Site Name	Distance (kilometers)
CBCC	Chesapeake Bay	Cape Charles	VA	CC	Cape Charles	0
CBDP	Chesapeake Bay	Dandy Point	VA	LH	Lynnhaven Bay	28
PSWB	Pamlico Sound	Wysocking Bay	NC	HI(H)	Hatteras Island	37
PSWB	Pamlico Sound	Wysocking Bay	NC	BU	Beauford	95
CFBI	Cape Fear	Battery Island	NC	FR	Cape Fear	8
CHFJ	Charleston Harbor	Fort Johnson	SC	CHR	Charleston	2
SRTI	Savannah R. Est.	Tybee Island	GA	SAV	Savannah River	0
SSSI	Sapelo Sound	Sapelo Island	GA	SAP	Sapelo Island	1
MRCB	Matanzas River	Crescent Beach	FL	STA	Saint Augustine	9
IRSR	Indian River	Sebastian River	FL	FTP	Fort Pierce	42
RBHC	Rookery Bay	Henderson Creek	FL	NAP	Naples	1
TBCB	Tampa Bay	Cockroach Bay	FL	TAB	Tampa Bay	8
TBOT	Tampa Bay	Old Tampa Bay	FL	AN	Anclote	24
CKBP	Cedar Key	Black Point	FL	KEY	Cedar Key	12
APCP	Apalachicola Bay	Cat Point Bar	FL	AP	Apalachicola	1
PCLO	Panama City	Little Oyster Bar	FL	PAN	Panama City	7
PBIB	Pensacola Bay	Indian Bayou	FL	PEN	Pensacola	21
MBCP	Mobile Bay	Cedar Point Reef	AL	DAU	Dauphin Island	3
MSBB	Mississippi Sound	Biloxi Bay	MS	BIL	Biloxi	6
MSPC	Mississippi Sound	Pass Christian	MS	PAS	Pass Christian	7
LBMP	Lake Borgne	Malheureux Point	LA	BOR	Lake Borgne,	10
LBMP	Lake Borgne	Malheureux Point	LA	DRM	Drum Bay	33
BSBG	Breton Sound	Bay Gardene	LA	CAM	Lake Campo	7
BSBG	Breton Sound	Bay Gardene	LA	PUK	Pumpkin Bay	12
BSBG	Breton Sound	Bay Gardene	LA	BLA	Black Bay	3
BSSI	Breton Sound	Sable Island	LA	QRT	Quarantine Bay	5
BSBG	Breton Sound	Bay Gardene	LA	BAS	Basitan Bay	31
BBMB	Barataria Bay	Middle Bank	LA	BRT	Barataria Bay	7

NS&T Site Code	NS&T Site Name		State	EPA Site Code	EPA Site Name	Distance (kilometers)
BBMB	Barataria Bay	Middle Bank	LA	ILE	Bay de Illettes	6
TBLF	Terrebonne Bay	Lake Felicity	LA	GOD	Golden Meadows	9
TBLB	Terrebonne Bay	Lake Barre	LA	BAR	Lake Barre	3
TBLB	Terrebonne Bay	Lake Barre	LA	TER	Terrabone Bay	17
TBLB	Terrebonne Bay	Lake Barre	LA	CHL	Chaland Bay	4
ABOB	Atchafalaya Bay	Oyster Bayou	LA	JUN	Junop Bay	8
ABOB	Atchafalaya Bay	Oyster Bayou	LA	DEW	Bayou de West	8
CLSJ	Calcasieu Lake	Saint Johns Island	LA	CAL	Calcasieu Lake	5
SLBB	Sabine Lake	Blue Buck Point	LA	SAB	Lake Sabine Bay	10
GBHR	Galveston Bay	Hanna Reef	TX	GAL	Galveston Bay	7
MBEM	Matagorda Bay	East Matagorda	TX	EMB	East Matagorda Bay	5
MBDI	Matagorda Bay	Dog Island	TX	MAT	Matagorda Bay	5
MBLR	Matagorda Bay	Lavaca River Mouth	TX	LVN(LAVN)	Lavaca Bay, North	1
MBGP	Matagorda Bay	Gallinipper Point	TX	LAV	Lavaca Bay	2
SAMP	San Antonio Bay	Mosquito Point	TX	ANT	San Antonio Bay	3
SAPP	San Antonio Bay	Panther Point Reef	TX	PPT(PAN)	Panther Point	2
ESSP	Espiritu Santo	South Pass Reef	TX	ESP(ESB)	Espiritu Santo Bay	3
MBAR	Mesquite Bay	Ayres Reef	TX	MEQ	Mesquite Bay	4
CBCR	Copano Bay	Copano Reef	TX	FUL	Fulton	8
ABLR	Aransas Bay	Long Reef	TX	ARN	Aransas Bay	6
LMSB	L. Laguna Madre	South Bay	TX	BRV	Brownsville	1
SDHI	San Diego Bay	Harbor Island	CA	SDH	San Diego Harbor	6
LJLJ	La Jolla	Point La Jolla	CA	LJ	Point La Jolla	1
OSBJ	Oceanside	Municipal Beach Jetty	CA	OS	Oceanside Jetty	1
SPFP	San Pedro Harbor	Fishing Pier	CA	SPH	San Pedro Harbor	1
SCBR	S. Catalina Island	Bird Rock	CA	SCI	Santa Catalina Island	0
PVRP	Palos Verdes	Royal Palms State Pk.	CA	PF	Point Fermin	1
SBSB	Point S. Barbara	Point Santa Barbara	CA	RC	Ricon Cliffs	26

Table 7. Comparison of NS&T Program's MW Project Sites to Former EPA'S MW Program Sites

NS&T Site Code	NS&T Site Name		State	EPA Site Code	EPA Site Name	Distance (kilometers)
PCPC	Point Conception	Point Conception	CA	PTA	Point Arguello	23
SLSL	San Luis Obispo B.	Point San Luis	CA	D	Diablo Canyon	9
SSSS	San Simeon Point	San Simeon Point	CA	SS	San Simeon	4
PGLP	Pacific Grove	Lovers Point	CA	SOB	Soberanes Point	92
MBSC	Monterey Bay	Point Santa Cruz	CA	SCZ	Santa Cruz	5
SFSM	San Francisco Bay	San Mateo Bridge	CA	SSF	South San Francisco (12-20)	18
SPSP	San Pablo Bay	Point San Pedro	CA	NSF	North San Francisco sites (1-11)	3
SFEM	San Francisco Bay	Emeryville	CA	NSF	North San Francisco sites (1-11)	1
FIEL	Farallon Island	East Landing	CA	FAR	Farallon Island	0
BBBE	Bodega Bay	Bodega Bay Entrance		BH	Bodega Head	0
PALH	Point Arena	Lighthouse	CA	PA	Point Arena	0
HMBJ	Eureka	Humboldt Bay Jetty	CA	CM	Cape Mendocino	42
HMBJ	Eureka	Humboldt Bay Jetty	CA	HUM	Humboldt	1
SCSG	Crescent	Point St. George	CA	PSG	Point Saint George	5
SCSG	Crescent	Point St. George	CA	GB	Gold Beach	79
CBCH	Coos Bay	Coos Head	OR	CB	Coos Bay	7
YHYH	Yaquina Bay	Yaquina Head	OR	YAQ(Y)	Yaquina Head	0
TBHP	Tillamook Bay	Hobsonville Point	OR	TIL	Tillamook Bay	0
CRSJ	Columbia River	South Jetty	OR	CR	Columbia River	0 - 2*
GHWJ	Gray's Harbor	Westport Jetty	WA	WB	Willapa Bay	30
GHWJ	Gray's Harbor	Westport Jetty	WA	GH	Grays Harbor	5
JFCF	S. Juan de Fuca	Cape Flattery	WA	CF	Cape Flattery	0
WIPP	Whidbey Island	Possession Point	WA	PS	Puget Sound	0
PRPR	Point Roberts	Point Roberts	WA	BB	Boundary Bay	15

* More than one collection location exists for the same site.